UNITED STATES DISTRICT COURT
EASTERN DISTRICT OF TEXAS
MARSHALL DIVISION

DYNAMIC DATA TECHNOLOGIES, LLC, *Plaintiff,* v. **GOOGLE LLC AND YOUTUBE, LLC,** *Defendants.*	Civil Action No._____ **JURY TRIAL DEMANDED**

COMPLAINT FOR PATENT INFRINGEMENT

Dynamic Data Technologies, LLC ("Dynamic Data") bring this action and make the following allegations of patent infringement relating to U.S. Patent Nos.: 8,135,073 (the "'073 patent"); 8,073,054 (the "'054 patent"); 6,774,918 (the "'918 patent"); 8,184,689 (the "'689 patent"); 6,996,177 (the "'177 patent"); 8,311,112 (the "'112 patent"); 7,894,529 (the "'529 patent"); 7,519,230 (the "'230 patent"); 7,542,041 (the "'041 patent"); and 7,571,450 (the "'450 patent") (collectively, the "patents-in-suit").   Defendant Google LLC and YouTube, LLC (collectively, "Google" or "Defendant") infringes each of the patents-in-suit in violation of the patent laws of the United States of America, 35 U.S.C. § 1 *et seq*.

INTRODUCTION

1.   Dynamic Data's portfolio of over 1,000 patent assets encompasses core technologies in the field of image and video processing. Dynamic Data's patents arose from the research and development efforts of Koninklijke Philips N.V. ("Philips"). Founded in 1891, for well over a century, Philips pioneered ground breaking technologies, including compact audio cassettes, magnetic resonance imaging (MRI) machines, and compact discs.

2.   In an effort to facilitate the licensing of Philips' foundational technology, Dynamic Data is pursuing remedies for infringement of its patents in venues throughout the world. Contemporaneous to the filing of this Complaint and complaints against other companies selling the technologies claimed by Dynamic Data's patent portfolio, Dynamic Data filed patent enforcement actions against Google LLC,[1] Advanced Micro Devices, Inc.,[2] and Microsoft Corporation[3] in the Peoples Republic of China before the Nanjing Specialized Intellectual Property Tribunal. In addition, Dynamic Data has filed a patent enforcement action against Apple, Inc. in Düsseldorf, Germany.[4]

DYNAMIC DATA'S LANDMARK INVENTIONS

3.   The groundbreaking inventions in image and video processing taught in the patents-in-suit were pioneered by Philips. Video and image processing were at the heart of Philips' business for over fifty years. In 1891, Philips, then known as Philips & Company, was founded in Eindhoven, Netherlands to manufacture carbon-filament lamps.[5] In the 1920s, Philips began to produce vacuum tubes and small radios, which would augur Philips' later entry into video and audio processing.

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[1] Asserting Patent Nos. CN1266944C; CN1333373C; and CN1329870C (南京专业知识产权法院).

[2] Asserting Patent Nos. CN1303818C; CN1333373C; and CN1266944C (南京专业知识产权法院).

[3] Asserting Patent Nos. CN1266944C, CN1329870C, and CN1333373C (南京专业知识产权法院).

[4] Asserting Patent No. EP1520409 (Landgericht Düsseldorf).

[5] Gerard O'Regan, A BRIEF HISTORY OF COMPUTING at 99 (2012).

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Forerunner of the cassette equipment, Philips' EL 3300 battery-operated tape recorder. Later versions, the 3301 and 3302 incorporated design modifications but are physically identical.

N.A. Halbertsma, *The Birth of a Lamp Factory In 1891*, PHILIPS TECHNICAL REVIEW, Vol. 23 at 230, 234 (1961).

4.   In 1962, Philips introduced the first audio cassette tape.[6] A year later, Philips launched a small battery-powered audio tape recorder that used a cassette instead of a loose spool.[7] Philips C-cassette was later used as the first mass storage device for early personal computers in the 1970s and 1980s.
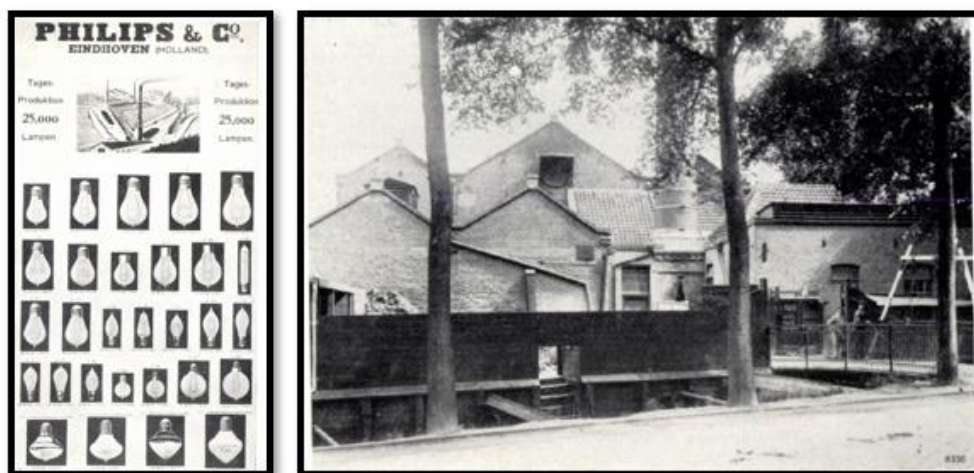

THE ROTARIAN MAGAZINE, Vol. 101 No. 6 at 70 (December 1962) (advertisement showing Philips Norelco device which used cassettes for recording audio for transcription); Fred Chandler,

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[6] Gerard O'Regan, PILLARS OF COMPUTING: A COMPENDIUM OF SELECT, PIVOTAL TECHNOLOGY FIRMS at 172 (2015) ("Philips invented the compact cassette for audio storage in 1962.")

[7] Anthony Pollard, GRAMOPHONE: THE FIRST 75 YEARS at 231 (1998).

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European Mfrs. Bid For Market Share, BILLBOARD MAGAZINE AT P-6 (April 8, 1967) (image of the Philips EL 3300 battery-operated tape recorder which was released in 1963); Jan Syrjala*, Car Stereo: How Does The Music Sound?,* N.Y. TIMES at 2-M (September 25, 1966) (showing Philips's Norelco Cassette "the Philips device has two tiny reels inside it, with the tape traveling from one to the other").

5.   In 1971, Philips demonstrated the world's first videocassette records (VCR). A year later, Philips launched the world's first home video cassette recorder, the N1500. In 1982, Philips teamed with Sony to launch the Compact Disc; this format evolved into the DVD and later Blu-ray, which Philips launched with Sony in 1997 and 2006 respectively.
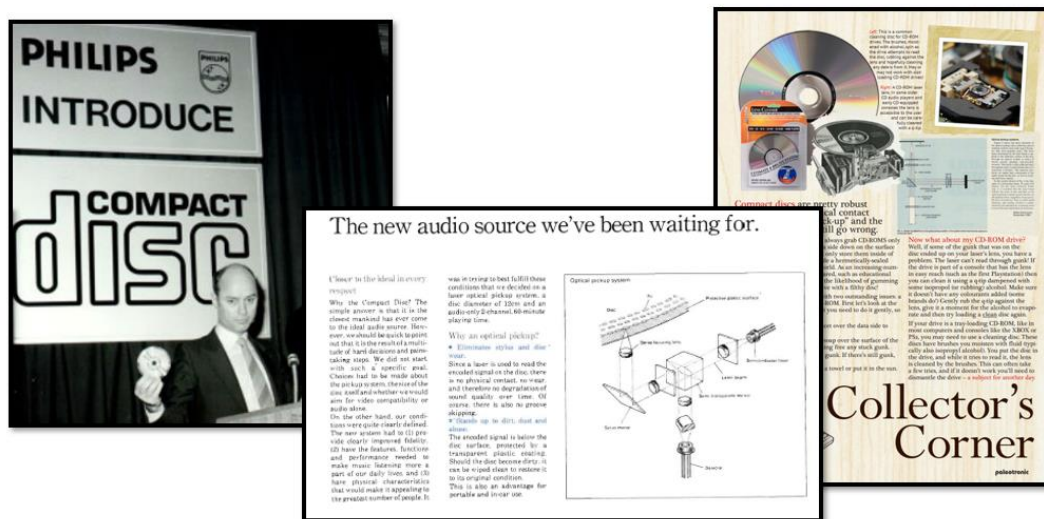
Hans Peek, Jan Bergmans, Jos Van Haaren, Frank Toolenaar, and Sorin Stan, ORIGINS AND SUCCESSORS OF THE COMPACT DISC: CONTRIBUTIONS OF PHILIPS TO OPTICAL STORAGE at 15 (2009) (showing image of Joop Sinjou of Philips introducing the compact disc in March 1979); Advertisements for Philip's Compact Disc Products (1982).

6.   In the late 1990s and early 2000s, Philips pioneered the development of technologies for encoding and decoding of video and audio content. At the time most of the technologies claimed by the patents in Dynamic Data's portfolio were invented, Philips' subsidiary primarily responsible for Philips' work in this field, Philips Semiconductor was the world's sixth

largest semiconductor company.[8]   The video encoding technologies developed by Philips Semiconductor enable video streaming on set-top boxes, smartphones, popular gaming consoles, Internet-connected computers, and numerous other types of media streaming devices.

7.   Philips Semiconductor dedicated significant research and development resources to advancing the technology of video compression and transmission by reducing file sizes and decreasing the processing resources required to transmit the data.[9]   Philips Semiconductor was among the first companies aggressively driving innovation in the field of video processing:

> The late 1980s and early 1990s saw the announcement of several complex, programmable VSPs. Important examples include chips from Matsushita, NTT, Philips [Semiconductors], and NEC.   All of these processors were high-performance parallel processors architected from the ground up for real-time video signal processing. . . .   The Philips VSP-1 and NEC processor were probably the most heavily used of these chips.[10]

8.   Starting in the 1960s Philips pioneered the development of audio and video technologies that would establish itself as a leader in the field that would later develop into the audio and video encoding fields.   Continuing Philips' pioneering history in these fields, the patents-in-suit disclose cutting-edge video compression and transmission technologies.

DYNAMIC DATA'S PATENT PORTFOLIO

9.   Dynamic Data's patent portfolio includes over 1,000 patent assets, with over 400 issued patents granted by patent offices around the world. Dynamic Data owns numerous patents issued by the United States Patent and Trademark Office, including each of the patents-in-suit,

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[8] *Company News; Philips in $1 Billion Deal for VLSI Technology*, THE NEW YORK TIMES (May 4, 1999), *available at*: https://www.nytimes.com/1999/05/04/business/company-news-philips-in-1-billion-deal-for-vlsi-technology.html.

[9] HU, YU HEN, PROGRAMMABLE DIGITAL SIGNAL PROCESSORS: ARCHITECTURE, PROGRAMMING, AND APPLICATIONS, at 190 (Dec. 6, 2001) ("Philips Semiconductors developed early dedicated video chips for specialized video processors.").

[10] *Id.* at 191.

The State Intellectual Property Office of the People's Republic of China,[11] the European Patent Office,[12] the German Patent and Trademark Office,[13] the Japan Patent Office,[14] and many other national patent offices.

10.   Philips Semiconductor's pioneering work in the area of video processing and encoding has resulted in various inventions that are fundamental to today's video processing technologies. Dynamic Data is the owner by assignment of over 1,000 of these patent assets, which include over 400 patents issued by patent offices around the world.

11.   Highlighting the importance of the patents-in-suit is the fact that the patents-in-suit have been cited by over 400 U.S. and international patents and patent applications by a wide variety of the largest companies operating in the field. For example, the patents-in-suit have been cited by companies such as:

- Samsung Electronics Co., Ltd.[15]
- Qualcomm Inc.[16]
- *Google LLC*[17]
- Intel Corporation[18]
- Broadcom Corporation[19]
- Microsoft Corporation[20]

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[11] *See, e.g.,* CN100504925C; CN100438609C; CN1679052B; CN1333373C; CN1329870C; CN1303818C.

[12] *See, e.g.,* European Patent Nos. EP1032921B1; EP1650978B1; EP1213700B1; EP1520409B1.

[13] *See, e.g.,* German Patent Nos. DE60120762; DE50110537; DE60126151; DE60348978; DE602004049357.

[14] *See, e.g.,* Japanese Patent Nos. JP4583924B2; JP5059855B2; JP5153336B2; JP4637585B2.

[15] *See, e.g.,* U.S. Patent Nos. 6,930,729; 7,911,537; 7,532,764; 8,605,790; and 8,095,887.

[16] *See, e.g.,* U.S. Patent Nos. 7,840,085; 8,649,437; 8,750,387; 8,918,533; 9,185,439; 9,209,934; 9,281,847; 9,319,448; 9,419,749; 9,843,844; 9,917,874; and 9,877,033.

[17] *See, e.g.,* U.S. Patent No. 8,787,454 and U.S. Patent Appl. No. 10/003,793.

[18] *See, e.g.,* U.S. Patent Nos. 7,554,559; 7,362,377; and 8,462,164.

[19] *See, e.g.,* U.S. Patent Nos. 8,325,273 and 9,377,987.

[20] *See, e.g.,* U.S. Patent Nos. 7,453,939; 7,670,227; 7,408,986; 7,421,129; 7,558,320; and 7,929,599.

- Sony Corporation[21]
- Fujitsu Ltd.[22]
- Panasonic Corporation[23]
- Matsushita Electric Industrial Company Limited[24]

12.   Google has had knowledge of Dynamic Data's patent portfolio, and each of the patents-in-suit, since at least September 10, 2018, when Dynamic Data's Chinese counsel sent a letter regarding Dynamic Data's portfolio and Google's infringement of certain Chinese patents owned by Dynamic Data. Dynamic Data's September 10, 2018, letter was sent to Mr. Michael Lee, whose title is Director, Head of Patents; Mr. Mario Queiroz, whose title is Vice President of Product Management; and Mr. Scott Beaumont, whose title is President, Google Greater China. In addition to addressing Google's infringement of certain Chinese patents, Dynamic Data included a list of all patents owned by Dynamic Data, including each of the patents-in-suit in this case and included a request to discuss the potential for a mutually-agreeable license agreement.

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[21] *See, e.g.*, U.S. Patent Nos. 7,218,354 and 8,174,615.

[22] *See, e.g.*, U.S. Patent Nos. 7,092,032 and 8,290,308.

[23] *See, e.g.*, U.S. Patent Nos. 8,164,687 and 8,432,495.

[24] *See, e.g.*, U.S. Patent Nos. 7,362,378 and 7,423,961.
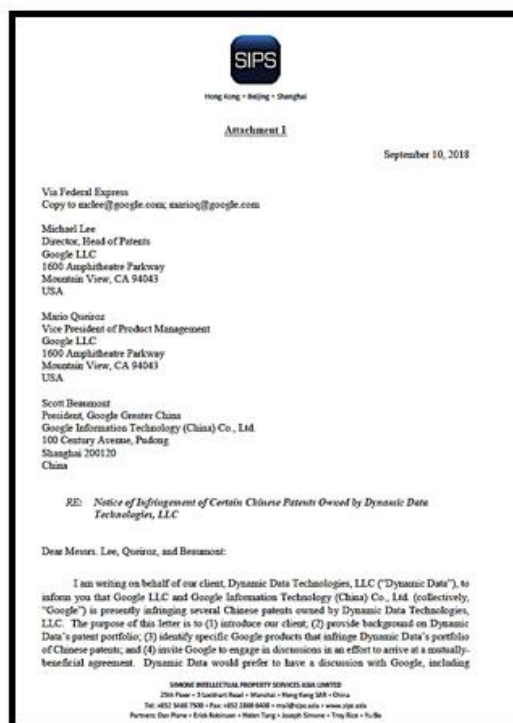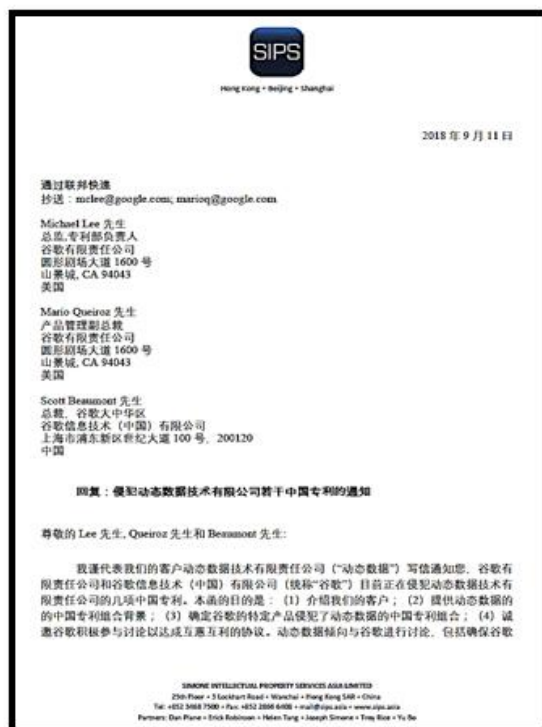
DYNAMIC DATA NOTICE LETTER TO GOOGLE (September 10, 2018) (images of Dynamic Data's notice letter sent to Google in Mandarin and English).

13.   On October 10, 2018, Mr. Frank Italiano, Senior Patent Counsel at Google, contacted counsel for Dynamic Data in response to Dynamic Data's September 10, 2018, letter. Unfortunately, Google refused to discuss the potential of a license agreement to Dynamic Data's patent portfolio without Dynamic Data first entering into an agreement that required Dynamic Data to waive certain rights relating to Google's willful infringement and Dynamic Data's entitlement to enhanced damages. Because Dynamic Data declined to waive its rights, Google did not engage in further discussions.

THE PARTIES

DYNAMIC DATA TECHNOLOGIES, LLC

14.   Dynamic Data Technologies, LLC ("Dynamic Data" or "Plaintiff") is a limited liability company organized under the laws of Delaware.

15.   In an effort to obtain compensation for Philips' pioneering work in the fields of video data encoding, decoding, and transmission, Dynamic Data acquired the patents-in-suit along with the several hundred additional issued United States and international Patents.

16.   Dynamic Data pursues the reasonable royalties owed for Google's use of the inventions claimed in Dynamic Data's patent portfolio, which primarily arise from Philips' groundbreaking technology, both here in the United States and throughout the world.

GOOGLE

17.   On information and belief, Google LLC is a Delaware limited liability company with a principal place of business at 1600 Amphitheatre Parkway, Mountain View, California. Google LLC may be served with process through its registered agent, the Corporation Service Company, 211 E. 7th Street, Suite 620, Austin, Texas 78701. On information and belief, Google is registered to do business in the State of Texas and has been since at least November 17, 2006.

18.   On information and belief, YouTube, LLC is a Delaware limited liability company at 901 Cherry Avenue, San Bruno, California 94066. YouTube, LLC may be served with process through its registered agent, the Corporation Service Company, 251 Little Falls Drive, Wilmington, Delaware 19808.

19.   On information and belief, YouTube, LLC is a wholly-owned subsidiary of Google LLC. YouTube, LLC and Google LLC are collectively referred to herein as "Google."

20.   On information and belief, Google is in the business of delivering information, including digital content such as movies, music, apps, and advertising.

21.   On information and belief, Google delivers this information through its Edge Network, which is its content-delivery network.

22.   On information and belief, Google's Edge Network consists of three elements: Core Data Centers, Edge Points of Presence, and Edge Nodes. The Core Data Centers are used for computation and backend storage. Edge Points of Presence connect the Data Centers to the internet. Edge Nodes are the layer of the network closest to the users, and content, including YouTube videos, video advertisements, music, mobile apps, and content from the Google Play store, is cached on the Edge Nodes.

23.   On information and belief, servers that cache this content in the Edge Nodes function as local data warehouses.

24.   On information and belief, Google has placed its Edge Nodes throughout the United States, including in the Eastern District of Texas.

25.   On information and belief, Google's Edge Node servers independently determine what content to cache based on local requests.

26.   On information and belief, Google's Edge Node servers are housed in spaced in the Eastern District of Texas leased by Google from Internet Service Providers.

27.   On information and belief, Google exercises exclusive control over the physical Edge Node servers located in the Eastern District of Texas and the physical space within which the servers are located and maintained.

JURISDICTION AND VENUE

28.   This action arises under the patent laws of the United States, Title 35 of the United States Code. Accordingly, this Court has exclusive subject matter jurisdiction over this action under 28 U.S.C. §§ 1331 and 1338(a).

29.   Upon information and belief, this Court has personal jurisdiction over Google in this action because Google has committed acts within the Eastern District of Texas giving rise to this action and has established minimum contacts with this forum such that the exercise of jurisdiction over Google would not offend traditional notions of fair play and substantial justice. Defendant Google, directly and/or through subsidiaries or intermediaries (including distributors, retailers, and others), has committed and continues to commit acts of infringement in this District by, among other things, offering to sell and selling products and/or services that infringe the patents-in-suit. Moreover, Google maintains a physical presence within the Eastern District of Texas through its Edge Node servers, and it maintains offices and facilities in the State of Texas with offices in Austin and Dallas, and actively directs its activities to customers located in the State of Texas.

30.   Venue is proper in this district under 28 U.S.C. §§ 1391(b)-(d) and 1400(b). Google maintains several Edge Node servers throughout the Eastern District of Texas. The physical presence of these Edge Node servers, along with Google's exclusive control over these servers constitutes a regular and established place of business under 28 U.S.C. § 1400(b). *See Seven Networks, LLC v. Google LLC*, 315 F. Supp. 3d 933, 947-66 (E.D. Tex. July 19, 2018), *mandamus denied, In re Google LLC*, Case No. 2018-152, slip op. at 3-6 (Fed. Cir. Oct. 29, 2018).

<u>**THE ASSERTED PATENTS**</u>

<u>**U.S. PATENT NO. 8,135,073**</u>

31.   U.S. Patent No. 8,135,073 (the "'073 patent") entitled, *Enhancing Video Images Depending On Prior Image Enhancements*, was filed on December 12, 2003, and claims priority to December 19, 2002. The '073 patent is subject to a 35 U.S.C. § 154(b) term extension of 1,799 days. Dynamic Data is the owner by assignment of all right, title, and interest in the '073 patent. A true and correct copy of the '073 patent is attached hereto as Exhibit 1.

32.   The '073 patent discloses novel methods and systems for enhancing subsequent images of a video stream in which frames are encoded based on previous frames using prediction and motion estimation.

33.   The inventions disclosed in the '073 patent reduce the processing capacity required for providing video enhancements to video processing through re-mapping of previous frames for subsequent frames.

34.   Accordingly, the technologies disclosed in the '073 patent enable the provision of enhanced video pictures with minimal additional hardware costs for the components required to successfully process the video data.

35.   The '073 patent discloses a video decoder comprising an input for receiving a video stream containing encoded frame based video information including an encoded first frame and an encoded second frame.

36.   The '073 patent discloses a video decoder comprising an input for receiving video information wherein the encoding of the second frame depends on the encoding of the first frame, the encoding of the second frame includes motion vectors indicating differences in positions between regions of the second frame and corresponding regions of the first frame, the motion

vectors define correspondence between regions of the second frame and corresponding regions of the first frame.

37.   The '073 patent discloses a video decoder comprising a decoding unit for decoding the frames, wherein the decoding unit recovers the motion vectors for the second frame.

38.   The '073 patent discloses a video decoder comprising a processing component configured to determine a re-mapping strategy for video enhancement of the decoded first frame using a region-based analysis, re-map the first frame using the re-mapping strategy, and re-map one or more regions of the second frame depending on the re-mapping strategy for corresponding regions of the first frame.

39.   The '073 patent and its underlying patent application have been cited by 36 patents and patent applications as relevant prior art.   Specifically, patents issued to the following companies have cited the '073 patent and its underlying patent application as relevant prior art:

- Canon Inc.
- Microsoft Corporation
- International Business Machines Corporation
- Qualcomm Inc.
- Digital Fountain Incorporated
- Samsung Electronics Co., Ltd.
- SK Planet Co. Ltd.

U.S. PATENT NO. 8,073,054

40.   U.S. Patent No. 8,073,054 (the "'054 patent") entitled, *Unit For And Method Of Estimating A Current Motion Vector*, was filed on December 12, 2002, and claims priority to January 17, 2002. The '054 patent is subject to a 35 U.S.C. § 154(b) term extension of 1,162 days. Dynamic Data is the owner by assignment of all right, title, and interest in the '054 patent. A true and correct copy of the '054 patent is attached hereto as Exhibit 2.

41.   The '054 patent discloses novel methods and apparatuses for estimating a current motion vector for a group of pixels of an image.

42.   The inventions disclosed in the '054 patent enable motion estimation with a relatively fast convergence in finding the appropriate motion vectors of the motion vector fields by adding a further candidate motion vector to the set of candidate motion vectors.

43.   The '054 patent discloses a motion estimation unit comprising a generating unit for generating a set of candidate motion vectors for the group of pixels, with the candidate motion vectors being extracted from a set of previously estimated motion vectors.

44.   The '054 patent discloses a motion estimation unit comprising a match error unit for calculating match errors of respective candidate motion vectors.

45.   The '054 patent discloses a motion estimation unit comprising a selector for selecting the current motion vector from the candidate motion vectors by means of comparing the match errors of the respective candidate motion vectors, characterized in that the motion estimation unit is arranged to add a further candidate motion vector to the set of candidate motion vectors by calculating the further candidate motion vector on basis of a first motion vector and a second motion vector, both belonging to the set of previously estimated motion vectors.

46.   The '054 patent discloses a motion estimation unit that calculates the further candidate motion vector on basis of the first motion vector and the second motion vector, with the first motion vector belonging to a first forward motion vector field and the second motion vector belonging to a second forward motion vector field, with the first forward motion vector field and the second forward motion vector field being different.

47.   The '054 patent discloses a motion estimation unit that arranges to calculate the further candidate motion vector by means of calculating a difference between the second motion vector and the first motion vector.

48.   The '054 patent and its underlying patent application have been cited by 14 patents and patent applications as relevant prior art. Specifically, patents issued to the following companies have cited the '054 patent and its underlying patent application as relevant prior art:

- Canon Inc.
- Huawei Technologies, Ltd.
- Imagination Technologies Ltd.
- MediaTek Inc.
- Panasonic Corp.
- Samsung Electronics Co., Ltd.
- Siemens Healthcare GmbH
- Tencent Technology (Shenzhen) Co., Ltd.

U.S. PATENT NO. 6,774,918

49.   U.S. Patent No. 6,774,918 ("the '918 patent") entitled, *Video Overlay Processor with Reduced Memory And Bus Performance Requirements*, was filed on June 28, 2000. The '918 patent is subject to a 35 U.S.C. § 154(b) term extension of 591 days. Dynamic Data is the owner by assignment of all right, title, and interest in the '918 patent.   A true and correct copy of the '918 patent is attached hereto as Exhibit 3.

50.   The '918 patent claims specific methods and systems for providing an overlay such as a cursor in an on-screen display in a consumer electronic device. On-screen display (OSD) data for generating an image on a display device are downloaded to an OSD unit on an integrated circuit.

51.   The '918 patent discloses downloading on-screen display (OSD) data for generating an image on a display device.

52.   The '918 patent further discloses downloading the on-screen display (OSD) data in segments separated by gaps.

53.   The '918 patent further discloses, during a gap in downloading the on-screen display data, downloading an amount of overlay data for generating an overlay on the image generated on a display device.

54.   Further, the '918 patent discloses that the overlay data downloaded during a gap comprises a portion of the overlay data.

55.   The inventions disclosed in the '918 patent improve the operation and efficiency of computer components because only a portion of the overlay data is downloaded during each burst gap, thus reducing the amount of memory needed to store the overlay data. The inventions disclosed in the '918 patent further eliminate the requirement that on-chip memory be large enough to hold the data needed for an entire overlay. Instead, only one line or a part of one line of the overlay needs to be stored on-chip.

56.   The '918 patent claims a technical solution to a problem unique to video processing.

57.   The '918 patent has been cited by several United States patents and patent applications as relevant prior art. Specifically, patents issued to Realtek Semiconductor Corp., Samsung Electronics Co., Ltd., and Thomson Licensing SA have all cited the '918 patent as relevant prior art.

U.S. PATENT NO. 8,184,689

58.   U.S. Patent No. 8,184,689 (the "'689 patent") entitled, *Method Video Encoding And Decoding Preserving Cache Localities*, was filed on August 7, 2006, and claims priority to August 17, 2005. The '689 patent is subject to a 35 U.S.C. § 154(b) term extension of 948 days. Dynamic

Data is the owner by assignment of all right, title, and interest in the '689 patent. A true and correct copy of the '689 patent is attached hereto as Exhibit 4.

59.   The '689 patent discloses novel methods and apparatuses for encoding and decoding video data.

60.   The inventions disclosed in the '689 patent processing time and power consumption associated with encoding and decoding video stream data is reduced by reducing off-chip memory accesses through using simultaneous encoded/decoded images as a reference image for encoding/decoding at least one of the other simultaneously encoded/decoded images.

61.   The '689 patent discloses a method for encoding and decoding a video stream, including a plurality of images in a video processing apparatus having a processing unit coupled to a first memory, further comprising a second memory.

62.   The '689 patent discloses a method for encoding and decoding a video stream comprising providing a subset of image data stored in the second memory in the first memory.

63.   The '689 patent discloses a method for encoding and decoding a video stream comprising simultaneous encoding/decoding of more than one image of the video stream, by accessing said subset, wherein the simultaneously encoding/decoding is performed by access sharing to at least one image.

64.   The '689 patent and its underlying patent application have been cited by several patents and patent applications as relevant prior art. Specifically, patents issued to Fujitsu Ltd., Qualcomm Inc., Sony Corporation, Sun Patent Trust, and VIXS Systems Incorporated have all cited the '689 patent and its underlying patent application as relevant prior art.

U.S. PATENT NO. 6,996,177

65.   U.S. Patent No. 6,996,177 (the "'177 patent") entitled, *Motion Estimation*, was filed on July 24, 2000, and claims priority to August 22, 1999. The '177 patent is subject to a 35 U.S.C. § 154(b) term extension of 1,103 days. Dynamic Data is the owner by assignment of all right, title, and interest in the '177 patent. A true and correct copy of the '177 patent is attached hereto as Exhibit 5.

66.   The '177 patent claims specific methods and devices for motion estimation and motion-compensated picture signal processing.

67.   The '177 patent discloses a motion vector estimation method and device that carries out a block-based motion vector estimation process that involves comparing a plurality of candidate vectors to determine block-based motion vectors.

68.   The '177 patent discloses a motion vector estimation method and device that determines at least a most frequently occurring block-based motion vector.

69.   The '177 patent discloses a motion vector estimation method and device that carries out a global motion vector estimation process using at least the most frequently occurring block-based motion vector to obtain a global motion vector.

70.   The '177 patent discloses a motion vector estimation method and device that applies the global motion vector as a candidate vector to the block-based motion vector estimation process.

71.   The inventions disclosed in the '177 patent improve the operation of the computer components necessary to the performance of picture signal processing by reducing the load on the central processing unit.

DYNAMIC DATA COMPLAINT FOR PATENT INFRINGEMENT

72.   The '177 patent has been cited by 16 United States and International patents and patent applications as relevant prior art. Specifically, patents issued to the following companies have cited the '177 patent as relevant prior art:

- Qualcomm Incorporated
- LG Electronics
- Microsoft Corporation
- Samsung Electronics Co., Ltd.
- VIXS Systems Incorporated
- General Instrument Corporation

U.S. PATENT NO. 8,311,112

73.   U.S. Patent No. 8,311,112 (the "'112 patent") entitled, *System And Method For Video Compression Using Predictive Coding*, was filed on December 31, 2008. The '112 patent is subject to a 35 U.S.C. § 154(b) term extension of 847 days. Dynamic Data is the owner by assignment of all right, title, and interest in the '112 patent. A true and correct copy of the '112 patent is attached hereto as Exhibit 6.

74.   The '112 patent discloses novel methods and systems for video compression.

75.   The '112 patent discloses novel technologies for video compression that perform predictive coding on a macroblock of a video frame such that a set of pixels of the macroblock is coded using some of the pixels from the same video frame as reference pixels and the rest of the macroblock is coded using reference pixels from at least one other video frame.

76.   The '112 patent discloses a system for video compression comprising an intra-frame coding unit configured to perform predictive coding on a set of pixels of a macroblock of pixels using a first group of reference pixels, the macroblock of pixels and the first group of reference pixels being from a video frame.

77.   The '112 patent discloses a system for video compression comprising an inter-frame coding unit configured to perform predictive coding on the rest of the macroblock of pixels

using a second group of reference pixels, the second group of reference pixels being from at least one other video frame.

78. The '112 patent and its underlying patent application have been cited by 10 patents and patent applications as relevant prior art. Specifically, patents issued to the following companies have cited the '112 patent and its underlying patent application as relevant prior art:

- British Broadcasting Corporation
- *Google LLC*
- Megachips Corp.
- Olympus Corp.
- Samsung Electronics Co., Ltd.
- Sony Corporation
- Toshiba Corporation

U.S. PATENT NO. 7,894,529

79. U.S. Patent No. 7,894,529 (the "'529 patent") entitled, *Method And Device For Determining Motion Vectors*, was filed on June 1, 2006, and claims priority to June 3, 2005. The '529 patent is subject to a 35 U.S.C. § 154(b) term extension of 1,301 days. Dynamic Data is the owner by assignment of all right, title, and interest in the '529 patent. A true and correct copy of the '529 patent is attached hereto as Exhibit 7.

80. The '529 patent discloses novel methods and apparatuses for determining motion vectors that are each assigned to individual image regions.

81. The inventions disclosed in the '529 patent enable an increase in the resolution of video and image signals during the motion estimation process.

82. The '529 patent discloses a method for determining motion vectors which are assigned to individual image regions of an image.

83. The '529 patent discloses a method wherein an image is subdivided into a number of image blocks, and a motion estimation technique is implemented to assign at least one motion

vector to each of the image blocks where a modified motion vector is generated for at least a first image block.

84.   The '529 patent discloses a method that determines at least a second image block through which the motion vector assigned to the first image block at least partially passes.

85.   The '529 patent discloses a method that generates the modified motion vector as a function of a motion vector assigned to at least the second image block.

86.   The '529 patent discloses a method that assigns the modified motion vector as the motion vector to the first image block.

87.   The '529 patent and its underlying patent application have been cited by multiple patents and patent applications as relevant prior art. Specifically, patents issued to Fujifilm Corp., and Samsung Electronics Co., Ltd. have cited the '529 patent and its underlying patent application as relevant prior art.

U.S. PATENT NO. 7,519,230

88.   U.S. Patent No. 7,519,230 (the "'230 patent") entitled, *Background Motion Vector Detection*, was filed on December 16, 2003, and claims priority to January 23, 2003. The '230 patent is subject to a 35 U.S.C. § 154(b) term extension of 685 days. Dynamic Data is the owner of all right, title, and interest in the '230 patent. A true and correct copy of the '230 patent is attached hereto as Exhibit 8.

89.   The '230 patent claims specific methods and systems to select a background motion vector for a pixel in an occlusion region of an image.

90.   The '230 patent discloses systems and methods determine the correct motion vector in occlusion regions, thereby reducing or eliminating artifacts of motion compensated image rate converters, which are referred to as "halos" in the display of video images.

91.   The '230 patent claims a method of selecting a background motion vector for a pixel in an occlusion region of an image comprising computing a model-based motion vector for the pixel on basis of a motion model being determined on basis of a part of a motion vector field of the image.

92.   The '230 patent claims a method of selecting a background motion vector for a pixel in an occlusion region of an image comprising comparing the model-based motion vector with each of the motion vectors of the set of motion vectors.

93.   The '230 patent claims a method of selecting a background motion vector for a pixel in an occlusion region of an image comprising selecting a particular motion vector of the set of motion vectors on basis of the comparing and for assigning the particular motion vector as the background motion vector.

94.   The '230 patent has been cited by 28 United States and international patents and patent applications as relevant prior art. Specifically, patents issued to the following companies have cited the '230 patent as relevant prior art:

- Sony Corporation
- Fujitsu Ltd.
- Motorola Solutions Inc.
- Nokia Oyj
- Qualcomm Inc.
- Samsung Electronics Co., Ltd.
- Toshiba Corporation

U.S. PATENT NO. 7,542,041

95.   U.S. Patent No. 7,542,041 (the "041 patent") entitled, *Runtime Configurable Virtual Video Pipeline*, was filed on April 2, 2004, and claims priority to April 3, 2003. The '041 patent is subject to a 35 U.S.C. § 154(b) term extension of 288 days. Dynamic Data is the owner

by assignment of all right, title, and interest in the '041 patent. A true and correct copy of the '041 patent is attached hereto as Exhibit 9.

96.   The '041 patent discloses novel systems for dynamically configuring a multi-pipe pipeline system.

97.   The inventions disclosed in the '041 patent enable a multiple-pipeline system that is dynamically configurable to effect various combinations of functions for each pipeline.

98.   The inventions disclosed in the '041 patent teach a multiple pipeline system that includes a pool of auxiliary function blocks that are provided as required to select pipelines.

99.   In one embodiment of the '041 patent, each pipeline of the multiple-pipeline system is configured to include a homogenous set of core functions. A pool of auxiliary functions is provided for selective insertion of auxiliary functions between core functions of select pipelines.

100.   In one embodiment of the '041 patent, each auxiliary function includes a multiplexer that allows it to be selectively coupled within each pipeline.

101.   The '041 patent discloses, in one embodiment, a processing system that includes a plurality of pipelines, with each pipeline of the plurality including a plurality of core pipeline elements that are configured to sequentially process data as it traverses the pipeline.

102.   The '041 patent discloses, in one embodiment, a processing system that includes a plurality of auxiliary elements, each auxiliary element of the plurality of auxiliary elements being configured to be selectively coupled to multiple pipelines of the plurality of pipelines.

103.   The '041 patent discloses, in one embodiment, a processing system wherein the auxiliary elements are responsive to external coupling-select signals.

104.   The '041 patent discloses, in one embodiment, a processing system wherein a plurality of auxiliary elements are within a selected pipeline of the multiple pipelines, between a

pair of core pipeline elements of the plurality of core pipeline elements to process the data as it traverses between the pair of core elements.

105.   The '041 patent has been cited by several United States patents and patent applications as relevant prior art. Specifically, patents and patent applications issued to Microsoft Corporation, Xilinx Inc., Canon Inc., Intel Corporation, and Nokia Oyj have cited the '041 patent and its underlying patent application as relevant prior art.

U.S. PATENT NO. 7,571,450

106.   U.S. Patent No. 7,571,450 (the "'450 patent") entitled, *System For And Method Of Displaying Information*, was filed on February 12, 2003, and claims priority to March 11, 2002. The '450 patent is subject to a 35 U.S.C. § 154(b) term extension of 846 days. Dynamic Data is the owner by assignment of all right, title, and interest in the '450 patent. A true and correct copy of the '450 patent is attached hereto as Exhibit 10.

107.   The '450 patent discloses novel methods and systems for displaying information. The inventions disclosed in the '450 patent enable methods and systems wherein a user does not need to make a new selection after being switched from one service to a second service.

108.   The inventions disclosed in the '450 patent permit a user of an information display system to have selections made on a first service also presented when the user switches to a second service without requiring the user to browse through the menus to define the type of information to be displayed a second time.

109.   In one embodiment of the '450 patent, the user selection being made on the basis of the provided options while the first service was selected is use to select the appropriate data elements of the stream of the second service.

110.   The inventions disclosed in the '450 patent enable various content sources to share similar information models.

111.   The '450 patent, in one embodiment, discloses a method of displaying information on a display device wherein receiving a transport stream comprises services, with the services having elementary streams of video and of data elements.

112.   The '450 patent, in one embodiment, discloses a method of displaying information on a display device wherein user actions of making a user selection of a type of information to be displayed on the device are received.

113.   The '450 patent, in one embodiment, discloses a method of displaying information on a display device wherein filtering to select a data element of a first one of the services on the basis of the user selection is performed.

114.   The '450 patent, in one embodiment, discloses a method of displaying information on a display device wherein rendering to calculate an output image to be displayed on the display device, on the basis of the first data element selected by the filer is performed.

115.   The '450 patent, in one embodiment, discloses a method of displaying information on a display device wherein switching from the first one of the services to a second one of the services, characterized in comprising a second step of filtering to select a second data-element of the second one of the services, on basis of the user selection is performed.

116.   The '450 patent, in one embodiment, discloses a method of displaying information on a display device wherein being switched from the first one of the services to the second one of the services, with the data-element and the second data-element being mutually semantically related and a second step of rendering to calculate the output image to be displayed on the display device, on basis of the second data-element selected by the filter is performed.

117.   The '450 patent and its underlying patent application have been cited by several

patents and patent applications as relevant prior art. Specifically, patents issued to AT&T

Intellectual Property I LP, Nokia Oyj, Samsung Electronics Co., Ltd., and ZTE Corporation have

all cited the '450 patent and its underlying patent application as relevant prior art.

COUNT I
INFRINGEMENT OF U.S. PATENT NO. 8,135,073

118.   Dynamic Data references and incorporates by reference the preceding paragraphs

of this Complaint as if fully set forth herein.

119.   Google designs, makes, uses, sells, and/or offers for sale in the United States

products and/or services for enhancing subsequent images of a video stream in which frames are

encoded based on previous frames using prediction and motion estimation.

120.   Google designs, makes, sells, offers to sell, imports, and/or uses products and

services that implement the High Efficiency Video Coding (HEVC; also known as H.265)

standard, including by way of illustrative example only: the Google Cloud Platform (e.g., Google

Cloud Transcoding), Google devices (e.g., Google Chromecast Ultra, Google Cast, Google Pixel),

YouTube products (e.g., YouTube website, YouTube TV, YouTube Live Streaming Platform,

YouTube App), Google Photos, Google Duo, and Android 5.0+ (and all versions and variations

thereof) (collectively, the "Google '073 Product(s)").

121.   On information and belief, one or more Google subsidiaries and/or affiliates use the

Google '073 Products in regular business operations.

122.   On information and belief, one or more of the Google '073 Products include

technology for enhancing subsequent images of a video stream in which frames are encoded based

on previous frames using prediction and motion estimation.

123.   On information and belief, Google has directly infringed and continues to directly infringe the '073 patent by, among other things, making, using, offering for sale, and/or selling technology for enhancing subsequent images of a video stream in which frames are encoded based on previous frames using prediction and motion estimation, including but not limited to the Google '073 Products.

124.   On information and belief, one or more of the Google '073 Products reduce the processing capacity required for providing video enhancements to video processing through re-mapping of previous frames for subsequent frames.

125.   On information and belief, one or more of the Google '073 Products enable the provision of enhanced video pictures with minimal additional hardware costs for the components required to successfully process the video data.

126.   On information and belief, one or more of the Google '073 Products include an input for receiving a video stream containing encoded frame based video information including an encoded first frame and an encoded second frame.

127.   On information and belief, one or more of the Google '073 Products include a video decoder comprising an input for receiving video information wherein the encoding of the second frame depends on the encoding of the first frame, the encoding of the second frame includes motion vectors indicating differences in positions between regions of the second frame and corresponding regions of the first frame, the motion vectors define correspondence between regions of the second frame and corresponding regions of the first frame.

128.   On information and belief, one or more of the Google '073 Products include a video decoder comprising a decoding unit for decoding the frames, wherein the decoding unit recovers the motion vectors for the second frame.

129.   On information and belief, one or more of the Google '073 Products include a video decoder comprising a processing component configured to determine a re-mapping strategy for video enhancement of the decoded first frame using a region-based analysis, re-map the first frame using the re-mapping strategy, and re-map one or more regions of the second frame depending on the re-mapping strategy for corresponding regions of the first frame.

130.   On information and belief, the Google '073 Products are available to businesses and individuals throughout the United States.

131.   On information and belief, the Google '073 Products are provided to businesses and individuals located in the Eastern District of Texas.

132.   By making, using, testing, offering for sale, and/or selling products and services for enhancing subsequent images of a video stream in which frames are encoded based on previous frames using prediction and motion estimation, including but not limited to the Google '037 Products, Google has injured Dynamic Data and is liable to the Plaintiff for directly infringing one or more claims of the '073 patent, including at least claim 14 pursuant to 35 U.S.C. § 271(a).

133.   On information and belief, Google also indirectly infringes the '073 patent by actively inducing infringement under 35 USC § 271(b).

134.   Google has had knowledge of Dynamic Data's patent portfolio, and each of the patents-in-suit, since at least September 10, 2018, when Dynamic Data's Chinese counsel sent a letter to Google regarding Dynamic Data's patent portfolio, in which Dynamic Data identified each of the patents-in-suit, including the '073 patent.

135.   Alternatively, Google has had knowledge of the '073 patent since at least service of this Complaint or shortly thereafter, and on information and belief, Google knew of the '073 patent and knew of its infringement, including by way of this lawsuit.

136.   On information and belief, Google intended to induce patent infringement by third-party customers and users of the Google '073 Products and had knowledge that the inducing acts would cause infringement or was willfully blind to the possibility that its inducing acts would cause infringement. Google specifically intended and was aware that the normal and customary use of the accused products would infringe the '073 patent. Google performed the acts that constitute induced infringement, and would induce actual infringement, with knowledge of the '073 patent and with the knowledge that the induced acts would constitute infringement. For example, Google provides the Google '073 Products that have the capability of operating in a manner that infringe one or more of the claims of the '073 patent, including at least claim 14, and Google further provides documentation and training materials that cause customers and end users of the Google '073 Products to utilize the products in a manner that directly infringe one or more claims of the '073 patent.[25] By providing instruction and training to customers and end-users on how to use the Google '073 Products in a manner that directly infringes one or more claims of the

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[25] *See, e.g.*, *Getting Started with Google Cloud Platform*, GOOGLE WEBSITE, *available at*: https://cloud.google.com/getting-started/ (last visited Nov. 2018); *Using Cloud Pub/Sub for Long-running Tasks*, GOOGLE SOLUTIONS WEBSITE (Sept. 19, 2018), *available at*: https://cloud.google.com/docs/tutorials#media; *Processing User-Generated Content Using Video Intelligence and Cloud Vision APIs (tutorial)*, GOOGLE SOLUTIONS WEBSITE (July 10, 2018), *available at*: https://cloud.google.com/solutions/processing-user-generated-content-using-video-intelligence; *How to cast: A quick start guide*, GOOGLE SUPPORT WEBSITE, *available at*: https://support.google.com/chromecast/answer/6006232?hl=en (last visited Nov. 2018); *Explore your Pixel phone*, GOOGLE SUPPORT WEBSITE, *available at*: https://support.google.com/pixelphone/topic/7084095?hl=en&ref_topic=7078250 (last visited Nov. 2018); *YouTube Help*, YOUTUBE WEBSITE, *available at*: https://www.youtube.com/channel/UCMDQxm7cUx3yXkfeHa5zJIQ 9 (last visited Nov. 2018); *Get started with Google Photos*, GOOGLE SUPPORT WEBSITE, *available at*: https://support.google.com/photos/answer/6220402?hl=en&ref_topic=6128818 (last visited Nov. 2018); *Tips for using Google Duo*, GOOGLE SUPPORT WEBSITE, *available at*: https://support.google.com/duo/answer/6376137?hl=en&ref_topic=6376099 (last visited Nov. 2018); *Android 5.0, Lollipop*, GOOGLE QUICK START GUIDE (2014); *Open Wonder, Android 8.0 Oreo*, ANDROID WEBSITE, *available at*: https://www.android.com/versions/oreo-8-0/ (last visited Nov. 2018).

'073 patent, including at least claim 14, Google specifically intended to induce infringement of the

'073 patent. On information and belief, Google engaged in such inducement to promote the sales

of the Google '073 Products, e.g., through Google user manuals, product support, marketing

materials, and training materials to actively induce the users of the accused products to infringe

the '073 patent. Accordingly, Google has induced and continues to induce users of the accused

products to use the accused products in their ordinary and customary way to infringe the '073

patent, knowing that such use constitutes infringement of the '073 patent.

137.   The '073 patent is well-known within the industry as demonstrated by multiple

citations to the '073 patent in published patents and patent applications assigned to technology

companies and academic institutions. Google is utilizing the technology claimed in the '073 patent

without paying a reasonable royalty. Google is infringing the '073 patent in a manner best

described as willful, wanton, malicious, in bad faith, deliberate, consciously wrongful, flagrant, or

characteristic of a pirate.

138.   To the extent applicable, the requirements of 35 U.S.C. § 287(a) have been met

with respect to the '073 patent.

139.   As a result of Google's infringement of the '073 patent, Dynamic Data has suffered

monetary damages, and seeks recovery in an amount adequate to compensate for Google's

infringement, but in no event less than a reasonable royalty for the use made of the invention by

Google together with interest and costs as fixed by the Court.

COUNT II
INFRINGEMENT OF U.S. PATENT NO. 8,073,054

140.   Dynamic Data references and incorporates by reference the preceding paragraphs

of this Complaint as if fully set forth herein.

141. Google designs, makes, uses, sells, and/or offers for sale in the United States products and/or services for estimating a current motion vector for a group of pixels of an image.

142. Google designs, makes, sells, offers to sell, imports, and/or uses products and services that implement the High Efficiency Video Coding (HEVC; also known as H.265) standard, including by way of illustrative example only: the Google Cloud Platform (e.g., Google Cloud Transcoding), Google devices (e.g., Google Chromecast Ultra, Google Cast, Google Pixel), YouTube products (e.g., YouTube website, YouTube TV, YouTube Live Streaming Platform, YouTube App), Google Photos, Google Duo, and Android 5.0+ (and all versions and variations thereof) (collectively, the "Google '054 Product(s)").

143. On information and belief, one or more Google subsidiaries and/or affiliates use the Google '054 Products in regular business operations.

144. On information and belief, one or more of the Google '054 Products include technology for estimating a current motion vector for a group of pixels of an image.

145. On information and belief, Google has directly infringed and continues to directly infringe the '054 patent by, among other things, making, using, offering for sale, and/or selling technology for estimating a current motion vector for a group of pixels of an image, including but not limited to the Google '054 Products.

146. On information and belief, one or more of the Google '054 Products enable motion estimation with a relatively fast convergence in finding the appropriate motion vectors of the motion vector fields by adding a further candidate motion vector to the set of candidate motion vectors.

147. On information and belief, one or more of the Google '054 Products include a motion estimation unit comprising a generating unit for generating a set of candidate motion

vectors for the group of pixels, with the candidate motion vectors being extracted from a set of previously estimated motion vectors.

148.   On information and belief, one or more of the Google '054 Products include a motion estimation unit comprising a match error unit for calculating match errors of respective candidate motion vectors.

149.   On information and belief, one or more of the Google '054 Products include a motion estimation unit comprising a selector for selecting the current motion vector from the candidate motion vectors by means of comparing the match errors of the respective candidate motion vectors, characterized in that the motion estimation unit is arranged to add a further candidate motion vector to the set of candidate motion vectors by calculating the further candidate motion vector on basis of a first motion vector and a second motion vector, both belonging to the set of previously estimated motion vectors.

150.   On information and belief, one or more of the Google '054 Products include a motion estimation unit that calculates the further candidate motion vector on basis of the first motion vector and the second motion vector, with the first motion vector belonging to a first forward motion vector field and the second motion vector belonging to a second forward motion vector field, with the first forward motion vector field and the second forward motion vector field being different.

151.   On information and belief, one or more of the Google '054 Products include a motion estimation unit that arranges to calculate the further candidate motion vector by means of calculating a difference between the second motion vector and the first motion vector.

152.   On information and belief, the Google '054 Products are available to businesses and individuals throughout the United States.

153.   On information and belief, the Google '054 Products are provided to businesses and individuals located in the Eastern District of Texas.

154.   By making, using, testing, offering for sale, and/or selling products and services for estimating a current motion vector for a group of pixels of an image, including but not limited to the Google '054 Products, Google has injured Dynamic Data and is liable to the Plaintiff for directly infringing one or more claims of the '054 patent, including at least claim 1 pursuant to 35 U.S.C. § 271(a).

155.   On information and belief, Google also indirectly infringes the '054 patent by actively inducing infringement under 35 USC § 271(b).

156.   Google has had knowledge of Dynamic Data's patent portfolio, and each of the patents-in-suit, since at least September 10, 2018, when Dynamic Data's Chinese counsel sent a letter to Google regarding Dynamic Data's patent portfolio, in which Dynamic Data identified each of the patents-in-suit, including the '054 patent.

157.   Alternatively, Google has had knowledge of the '054 patent since at least service of this Complaint or shortly thereafter, and on information and belief, Google knew of the '054 patent and knew of its infringement, including by way of this lawsuit.

158.   On information and belief, Google intended to induce patent infringement by third-party customers and users of the Google '054 Products and had knowledge that the inducing acts would cause infringement or was willfully blind to the possibility that its inducing acts would cause infringement. Google specifically intended and was aware that the normal and customary use of the accused products would infringe the '054 patent. Google performed the acts that constitute induced infringement, and would induce actual infringement, with knowledge of the '054 patent and with the knowledge that the induced acts would constitute infringement. For

example, Google provides the Google '054 Products that have the capability of operating in a manner that infringe one or more of the claims of the '054 patent, including at least claim 1, and Google further provides documentation and training materials that cause customers and end users of the Google '054 Products to utilize the products in a manner that directly infringe one or more claims of the '054 patent.[26] By providing instruction and training to customers and end-users on how to use the Google '054 Products in a manner that directly infringes one or more claims of the '054 patent, including at least claim 1, Google specifically intended to induce infringement of the '054 patent. On information and belief, Google engaged in such inducement to promote the sales of the Google '054 Products, e.g., through Google user manuals, product support, marketing materials, and training materials to actively induce the users of the accused products to infringe the '054 patent. Accordingly, Google has induced and continues to induce users of the accused products to use the accused products in their ordinary and customary way to infringe the '054 patent, knowing that such use constitutes infringement of the '054 patent.

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[26] *See, e.g.*, *Getting Started with Google Cloud Platform*, GOOGLE WEBSITE, *available at*: https://cloud.google.com/getting-started/ (last visited Nov. 2018); *Using Cloud Pub/Sub for Long-running Tasks*, GOOGLE SOLUTIONS WEBSITE (Sept. 19, 2018), *available at*: https://cloud.google.com/docs/tutorials#media; *Processing User-Generated Content Using Video Intelligence and Cloud Vision APIs (tutorial)*, GOOGLE SOLUTIONS WEBSITE (July 10, 2018), *available at*: https://cloud.google.com/solutions/processing-user-generated-content-using-video-intelligence; *How to cast: A quick start guide*, GOOGLE SUPPORT WEBSITE, *available at*: https://support.google.com/chromecast/answer/6006232?hl=en (last visited Nov. 2018); *Explore your Pixel phone*, GOOGLE SUPPORT WEBSITE, *available at*: https://support.google.com/pixelphone/topic/7084095?hl=en&ref_topic=7078250 (last visited Nov. 2018); *YouTube Help*, YOUTUBE WEBSITE, *available at*: https://www.youtube.com/channel/UCMDQxm7cUx3yXkfeHa5zJIQ 9 (last visited Nov. 2018); *Get started with Google Photos*, GOOGLE SUPPORT WEBSITE, *available at*: https://support.google.com/photos/answer/6220402?hl=en&ref_topic=6128818 (last visited Nov. 2018); *Tips for using Google Duo*, GOOGLE SUPPORT WEBSITE, *available at*: https://support.google.com/duo/answer/6376137?hl=en&ref_topic=6376099 (last visited Nov. 2018); *Android 5.0, Lollipop*, GOOGLE QUICK START GUIDE (2014); *Open Wonder, Android 8.0 Oreo*, ANDROID WEBSITE, *available at*: https://www.android.com/versions/oreo-8-0/ (last visited Nov. 2018).

159.   The '054 patent is well-known within the industry as demonstrated by multiple citations to the '054 patent in published patents and patent applications assigned to technology companies and academic institutions. Google is utilizing the technology claimed in the '054 patent without paying a reasonable royalty. Google is infringing the '054 patent in a manner best described as willful, wanton, malicious, in bad faith, deliberate, consciously wrongful, flagrant, or characteristic of a pirate.

160.   To the extent applicable, the requirements of 35 U.S.C. § 287(a) have been met with respect to the '054 patent.

161.   As a result of Google's infringement of the '054 patent, Dynamic Data has suffered monetary damages, and seeks recovery in an amount adequate to compensate for Google's infringement, but in no event less than a reasonable royalty for the use made of the invention by Google together with interest and costs as fixed by the Court.

COUNT III
INFRINGEMENT OF U.S. PATENT NO. 6,774,918

162.   Dynamic Data references and incorporates by reference the preceding paragraphs of this Complaint as if fully set forth herein.

163.   Google designs, makes, uses, sells, and/or offers for sale in the United States products and/or services for image processing.

164.   Google designs, makes, sells, offers to sell, imports, and/or uses products and services that implement Dynamic Adaptive Streaming over HTTP (MPEG-DASH), including by way of illustrative example only: Google devices (e.g., Google Chromecast Ultra, Google Cast, Google Pixel) and YouTube products (e.g., YouTube website, YouTube TV, YouTube Live Streaming Platform, YouTube App) (collectively, the "Google '918 Product(s)").

165.   On information and belief, one or more Google subsidiaries and/or affiliates use the Google '918 Products in regular business operations.

166.   On information and belief, one or more of the Google '918 Products include technology for image processing.

167.   On information and belief, the Google '918 Products are available to businesses and individuals throughout the United States.

168.   On information and belief, the Google '918 Products are provided to businesses and individuals located in the Eastern District of Texas.

169.   On information and belief, Google has directly infringed and continues to directly infringe the '918 patent by, among other things, making, using, offering for sale, and/or selling video processing technology, including but not limited to the Google '918 Products.

170.   On information and belief, one or more of the Google '918 Products provide an overlay such as a cursor in an on-screen display in a consumer electronic device.

171.   On information and belief, one or more of the Google '918 Products enable downloading on-screen display (OSD) data for generating an image on a display device.

172.   On information and belief, one or more of the Google '918 Products download the on-screen display (OSD) data in segments separated by gaps.

173.   On information and belief, one or more of the Google '918 Products download, during a gap in downloading the on-screen display data, an amount of overlay data for generating an overlay on the image generated on a display device.

174.   On information and belief, one or more of the Google '918 Products contain overlay data downloaded during a gap that comprises a portion of the overlay data.

175.   On information and belief, the Google '918 Products comprise a computer-usable medium having computer-readable program code embodied therein for causing a video processor to download on-screen display (OSD) data for generating an image on a display device, with said downloading occurring in segments separated by gaps.

176.   On information and belief, the Google '918 Products comprise a computer-usable medium having computer-readable program code embodied therein for causing a video processor to download an amount of overlay data for generating an overlay on an image during a gap in downloading the on-screen display (OSD) data, wherein the amount of overlay data comprises a portion of said overlay.

177.   By making, using, testing, offering for sale, and/or selling products and services, including but not limited to the Google '918 Products, Google has injured Dynamic Data and is liable for directly infringing one or more claims of the '918 patent, including at least claim 18, pursuant to 35 U.S.C. § 271(a).

178.   On information and belief, Google also indirectly infringes the '918 patent by actively inducing infringement under 35 USC § 271(b).

179.   Google has had knowledge of Dynamic Data's patent portfolio, and each of the patents-in-suit, since at least September 10, 2018, when Dynamic Data's Chinese counsel sent a letter to Google regarding Dynamic Data's patent portfolio, in which Dynamic Data identified each of the patents-in-suit, including the '918 patent.

180.   Alternatively, Google has had knowledge of the '918 patent since at least service of this Complaint or shortly thereafter, and on information and belief, Google knew of the '918 patent and knew of its infringement, including by way of this lawsuit.

181.   On information and belief, Google intended to induce patent infringement by third-party customers and users of the Google '918 Products and had knowledge that the inducing acts would cause infringement or was willfully blind to the possibility that its inducing acts would cause infringement. Google specifically intended and was aware that the normal and customary use of the accused products would infringe the '918 patent. Google performed the acts that constitute induced infringement, and would induce actual infringement, with knowledge of the '918 patent and with the knowledge that the induced acts would constitute infringement. For example, Google provides the Google '918 Products that have the capability of operating in a manner that infringe one or more of the claims of the '918 patent, including at least claim 18, and Google further provides documentation and training materials that cause customers and end users of the Google '918 Products to utilize the products in a manner that directly infringe one or more claims of the '918 patent.[27] By providing instruction and training to customers and end-users on how to use the Google '918 Products in a manner that directly infringes one or more claims of the '918 patent, including at least claim 18, Google specifically intended to induce infringement of the '918 patent. On information and belief, Google engaged in such inducement to promote the sales of the Google '918 Products, e.g., through Google user manuals, product support, marketing materials, and training materials to actively induce the users of the accused products to infringe the '918 patent. Accordingly, Google has induced and continues to induce users of the accused

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[27] *See, e.g.*, *How to cast: A quick start guide*, GOOGLE SUPPORT WEBSITE, *available at*: https://support.google.com/chromecast/answer/6006232?hl=en (last visited Nov. 2018); *Explore your Pixel phone*, GOOGLE SUPPORT WEBSITE, *available at*: https://support.google.com/pixelphone/topic/7084095?hl=en&ref_topic=7078250 (last visited Nov. 2018); *YouTube Help*, YOUTUBE WEBSITE, *available at*: https://www.youtube.com/channel/UCMDQxm7cUx3yXkfeHa5zJIQ 9 (last visited Nov. 2018).

products to use the accused products in their ordinary and customary way to infringe the '918 patent, knowing that such use constitutes infringement of the '918 patent.

182.   The '918 patent is well-known within the industry as demonstrated by multiple citations to the '918 patent in published patents and patent applications assigned to technology companies and academic institutions. Google is utilizing the technology claimed in the '918 patent without paying a reasonable royalty. Google is infringing the '918 patent in a manner best described as willful, wanton, malicious, in bad faith, deliberate, consciously wrongful, flagrant, or characteristic of a pirate.

183.   To the extent applicable, the requirements of 35 U.S.C. § 287(a) have been met with respect to the '918 patent.

184.   As a result of Google's infringement of the '918 patent, Dynamic Data has suffered monetary damages, and seeks recovery in an amount adequate to compensate for Google's infringement, but in no event less than a reasonable royalty for the use made of the invention by Google together with interest and costs as fixed by the Court.

COUNT IV
INFRINGEMENT OF U.S. PATENT NO. 8,184,689

185.   Dynamic Data references and incorporates by reference the preceding paragraphs of this Complaint as if fully set forth herein.

186.   Google designs, makes, uses, sells, and/or offers for sale in the United States products and/or services for encoding and decoding video data.

187.   Google designs, makes, sells, offers to sell, imports, and/or uses products and services that encode/decode video data by simultaneous encoding/decoding of more than one image of the video stream by access sharing to at least one image, including by way of illustrative

example only: the Google Cloud platform (e.g., Google Cloud Transcoding) and Google devices (e.g., Google Chromecast Ultra, Google Cast, Google Pixel) (and all versions and variations thereof) (collectively, the "Google '689 Product(s)").

188.   On information and belief, one or more Google subsidiaries and/or affiliates use the Google '689 Products in regular business operations.

189.   On information and belief, one or more of the Google '689 Products include technology for encoding and decoding video data.

190.   On information and belief, Google has directly infringed and continues to directly infringe the '689 patent by, among other things, making, using, offering for sale, and/or selling technology for encoding and decoding video data, including but not limited to the Google '689 Products.

191.   On information and belief, one or more of the Google '689 Products reduce processing time and power consumption associated with encoding and decoding video stream data by reducing off-chip memory accesses through using simultaneous encoded/decoded images as a reference image for encoding/decoding at least one of the other simultaneously encoded/decoded images.

192.   On information and belief, one or more of the Google '689 Products perform a method for encoding and decoding a video stream, including a plurality of images in a video processing apparatus having a processing unit coupled to a first memory, further comprising a second memory.

193.   On information and belief, one or more of the Google '689 Products perform a method for encoding and decoding a video stream comprising providing a subset of image data stored in the second memory in the first memory.

194.   On information and belief, one or more of the Google '689 Products perform a method for encoding and decoding a video stream comprising simultaneous encoding/decoding of more than one image of the video stream, by accessing said subset, wherein the simultaneously encoding/decoding is performed by access sharing to at least one image.

195.   On information and belief, the Google '689 Products are available to businesses and individuals throughout the United States.

196.   On information and belief, the Google '689 Products are provided to businesses and individuals located in the Eastern District of Texas.

197.   By making, using, testing, offering for sale, and/or selling products and services for encoding and decoding video data, including but not limited to the Google '689 Products, Google has injured Dynamic Data and is liable to the Plaintiff for directly infringing one or more claims of the '689 patent, including at least claim 1 pursuant to 35 U.S.C. § 271(a).

198.   On information and belief, Google also indirectly infringes the '689 patent by actively inducing infringement under 35 USC § 271(b).

199.   Google has had knowledge of Dynamic Data's patent portfolio, and each of the patents-in-suit, since at least September 10, 2018, when Dynamic Data's Chinese counsel sent a letter to Google regarding Dynamic Data's patent portfolio, in which Dynamic Data identified each of the patents-in-suit, including the '689 patent.

200.   Alternatively, Google has had knowledge of the '689 patent since at least service of this Complaint or shortly thereafter, and on information and belief, Google knew of the '689 patent and knew of its infringement, including by way of this lawsuit.

201.   On information and belief, Google intended to induce patent infringement by third-party customers and users of the Google '689 Products and had knowledge that the inducing acts

would cause infringement or was willfully blind to the possibility that its inducing acts would

cause infringement. Google specifically intended and was aware that the normal and customary

use of the accused products would infringe the '689 patent. Google performed the acts that

constitute induced infringement, and would induce actual infringement, with knowledge of the

'689 patent and with the knowledge that the induced acts would constitute infringement. For

example, Google provides the Google '689 Products that have the capability of operating in a

manner that infringe one or more of the claims of the '689 patent, including at least claim 1, and

Google further provides documentation and training materials that cause customers and end users

of the Google '689 Products to utilize the products in a manner that directly infringe one or more

claims of the '689 patent.[28] By providing instruction and training to customers and end-users on

how to use the Google '689 Products in a manner that directly infringes one or more claims of the

'689 patent, including at least claim 1, Google specifically intended to induce infringement of the

'689 patent. On information and belief, Google engaged in such inducement to promote the sales

of the Google '689 Products, e.g., through Google user manuals, product support, marketing

materials, and training materials to actively induce the users of the accused products to infringe

the '689 patent. Accordingly, Google has induced and continues to induce users of the accused

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[28] *See, e.g.*, *Getting Started with Google Cloud Platform*, GOOGLE WEBSITE, *available at*:
https://cloud.google.com/getting-started/ (last visited Nov. 2018); *Using Cloud Pub/Sub for
Long-running Tasks*, GOOGLE SOLUTIONS WEBSITE (Sept. 19, 2018), *available at*:
https://cloud.google.com/docs/tutorials#media; *Processing User-Generated Content Using
Video Intelligence and Cloud Vision APIs (tutorial)*, GOOGLE SOLUTIONS WEBSITE (July 10,
2018), *available at*: https://cloud.google.com/solutions/processing-user-generated-content-
using-video-intelligence; *How to cast: A quick start guide*, GOOGLE SUPPORT WEBSITE,
available at: https://support.google.com/chromecast/answer/6006232?hl=en (last visited Nov.
2018); *Explore your Pixel phone*, GOOGLE SUPPORT WEBSITE, *available at*:
https://support.google.com/pixelphone/topic/7084095?hl=en&ref_topic=7078250 (last visited
Nov. 2018).

products to use the accused products in their ordinary and customary way to infringe the '689 patent, knowing that such use constitutes infringement of the '689 patent.

202.   The '689 patent is well-known within the industry as demonstrated by multiple citations to the '689 patent in published patents and patent applications assigned to technology companies and academic institutions. Google is utilizing the technology claimed in the '689 patent without paying a reasonable royalty. Google is infringing the '689 patent in a manner best described as willful, wanton, malicious, in bad faith, deliberate, consciously wrongful, flagrant, or characteristic of a pirate.

203.   To the extent applicable, the requirements of 35 U.S.C. § 287(a) have been met with respect to the '689 patent.

204.   As a result of Google's infringement of the '689 patent, Dynamic Data has suffered monetary damages, and seeks recovery in an amount adequate to compensate for Google's infringement, but in no event less than a reasonable royalty for the use made of the invention by Google together with interest and costs as fixed by the Court.

COUNT V
INFRINGEMENT OF U.S. PATENT NO. 6,996,177

205.   Dynamic Data references and incorporates by reference the preceding paragraphs of this Complaint as if fully set forth herein.

206.   Google designs, makes, uses, sells, and/or offers for sale in the United States products and/or services for motion estimation.

207.   Google designs, makes, sells, offers to sell, imports, and/or uses products and services that implement the High Efficiency Video Coding (HEVC; also known as H.265) standard, including by way of illustrative example only: the Google Cloud Platform (e.g., Google

Cloud Transcoding), Google devices (e.g., Google Chromecast Ultra, Google Cast, Google Pixel), YouTube products (e.g., YouTube website, YouTube TV, YouTube Live Streaming Platform, YouTube App), Google Photos, Google Duo, and Android 5.0+ (and all versions and variations thereof) (collectively, the "Google '177 Product(s)").

208. On information and belief, one or more Google subsidiaries and/or affiliates use the Google '177 Products in regular business operations.

209. On information and belief, one or more of the Google '177 Products include technology for motion estimation and motion-compensated picture signal processing.

210. On information and belief, the Google '177 Products are available to businesses and individuals throughout the United States.

211. On information and belief, the Google '177 Products are provided to businesses and individuals located in the Eastern District of Texas.

212. On information and belief, Google has directly infringed and continues to directly infringe the '177 patent by, among other things, making, using, offering for sale, and/or selling products and services for motion estimation and motion-compensated picture signal processing.

213. The Google '177 Products comprise methods and devices for motion estimation and motion-compensated picture signal processing.

214. The Google '177 Products incorporate a motion vector estimation method and device that carries out a block-based motion vector estimation process that involves comparing a plurality of candidate vectors to determine block-based motion vectors.

215. The Google '177 Products determine at least a most frequently occurring block-based motion vector.

216.   The Google '177 Products carry out a global motion vector estimation process using at least the most frequently occurring block-based motion vector to obtain a global motion vector.

217.   The Google '177 Products applies the global motion vector as a candidate vector to the block-based motion vector estimation process.

218.   By making, using, testing, offering for sale, and/or selling products and services, including but not limited to the Google '177 Products, Google has injured Dynamic Data and is liable for directly infringing one or more claims of the '177 patent, including at least claim 1, pursuant to 35 U.S.C. § 271(a).

219.   On information and belief, Google also indirectly infringes the '177 patent by actively inducing infringement under 35 USC § 271(b).

220.   Google has had knowledge of Dynamic Data's patent portfolio, and each of the patents-in-suit, since at least September 10, 2018, when Dynamic Data's Chinese counsel sent a letter to Google regarding Dynamic Data's patent portfolio, in which Dynamic Data identified each of the patents-in-suit, including the '177 patent.

221.   Alternatively, Google has had knowledge of the '177 patent since at least service of this Complaint or shortly thereafter, and on information and belief, Google knew of the '177 patent and knew of its infringement, including by way of this lawsuit.

222.   On information and belief, Google intended to induce patent infringement by third-party customers and users of the Google '177 Products and had knowledge that the inducing acts would cause infringement or was willfully blind to the possibility that its inducing acts would cause infringement. Google specifically intended and was aware that the normal and customary use of the accused products would infringe the '177 patent. Google performed the acts that

constitute induced infringement, and would induce actual infringement, with knowledge of the '177 patent and with the knowledge that the induced acts would constitute infringement. For example, Google provides the Google '177 Products that have the capability of operating in a manner that infringe one or more of the claims of the '177 patent, including at least claim 1, and Google further provides documentation and training materials that cause customers and end users of the Google '177 Products to utilize the products in a manner that directly infringe one or more claims of the '177 patent.[29] By providing instruction and training to customers and end-users on how to use the Google '177 Products in a manner that directly infringes one or more claims of the '177 patent, including at least claim 1, Google specifically intended to induce infringement of the '177 patent. On information and belief, Google engaged in such inducement to promote the sales of the Google '177 Products, e.g., through Google user manuals, product support, marketing materials, and training materials to actively induce the users of the accused products to infringe the '177 patent. Accordingly, Google has induced and continues to induce users of the accused

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[29] *See, e.g.*, *Getting Started with Google Cloud Platform*, GOOGLE WEBSITE, *available at*: https://cloud.google.com/getting-started/ (last visited Nov. 2018); *Using Cloud Pub/Sub for Long-running Tasks*, GOOGLE SOLUTIONS WEBSITE (Sept. 19, 2018), *available at*: https://cloud.google.com/docs/tutorials#media; *Processing User-Generated Content Using Video Intelligence and Cloud Vision APIs (tutorial)*, GOOGLE SOLUTIONS WEBSITE (July 10, 2018), *available at*: https://cloud.google.com/solutions/processing-user-generated-content-using-video-intelligence; *How to cast: A quick start guide*, GOOGLE SUPPORT WEBSITE, *available at*: https://support.google.com/chromecast/answer/6006232?hl=en (last visited Nov. 2018); *Explore your Pixel phone*, GOOGLE SUPPORT WEBSITE, *available at*: https://support.google.com/pixelphone/topic/7084095?hl=en&ref_topic=7078250 (last visited Nov. 2018); *YouTube Help*, YOUTUBE WEBSITE, *available at*: https://www.youtube.com/channel/UCMDQxm7cUx3yXkfeHa5zJIQ 9 (last visited Nov. 2018); *Get started with Google Photos*, GOOGLE SUPPORT WEBSITE, *available at*: https://support.google.com/photos/answer/6220402?hl=en&ref_topic=6128818 (last visited Nov. 2018); *Tips for using Google Duo*, GOOGLE SUPPORT WEBSITE, *available at*: https://support.google.com/duo/answer/6376137?hl=en&ref_topic=6376099 (last visited Nov. 2018); *Android 5.0, Lollipop*, GOOGLE QUICK START GUIDE (2014); *Open Wonder, Android 8.0 Oreo*, ANDROID WEBSITE, *available at*: https://www.android.com/versions/oreo-8-0/ (last visited Nov. 2018).

products to use the accused products in their ordinary and customary way to infringe the '177 patent, knowing that such use constitutes infringement of the '177 patent.

223. The '177 patent is well-known within the industry as demonstrated by multiple citations to the '177 patent in published patents and patent applications assigned to technology companies and academic institutions. Google is utilizing the technology claimed in the '177 patent without paying a reasonable royalty. Google is infringing the '177 patent in a manner best described as willful, wanton, malicious, in bad faith, deliberate, consciously wrongful, flagrant, or characteristic of a pirate.

224. To the extent applicable, the requirements of 35 U.S.C. § 287(a) have been met with respect to the '177 patent.

225. As a result of Google's infringement of the '177 patent, Dynamic Data has suffered monetary damages, and seeks recovery in an amount adequate to compensate for Google's infringement, but in no event less than a reasonable royalty for the use made of the invention by Google together with interest and costs as fixed by the Court.

COUNT VI
INFRINGEMENT OF U.S. PATENT NO. 8,311,112

226. Dynamic Data references and incorporates by reference the preceding paragraphs of this Complaint as if fully set forth herein.

227. Google designs, makes, uses, sells, and/or offers for sale in the United States products and/or services for video compression.

228. Google designs, makes, sells, offers to sell, imports, and/or uses products and services that implement the High Efficiency Video Coding (HEVC; also known as H.265) standard, including by way of illustrative example only: the Google Cloud Platform (e.g., Google

Cloud Transcoding), Google devices (e.g., Google Chromecast Ultra, Google Cast, Google Pixel), YouTube products (e.g., YouTube website, YouTube TV, YouTube Live Streaming Platform, YouTube App), Google Photos, Google Duo, and Android 5.0+ (and all versions and variations thereof) (collectively, the "Google '112 Product(s)").

229.   On information and belief, one or more Google subsidiaries and/or affiliates use the Google '112 Products in regular business operations.

230.   On information and belief, one or more of the Google '112 Products include technology for video compression.

231.   On information and belief, Google has directly infringed and continues to directly infringe the '112 patent by, among other things, making, using, offering for sale, and/or selling technology for video compression, including but not limited to the Google '112 Products.

232.   On information and belief, one or more of the Google '112 Products perform predictive coding on a macroblock of a video frame such that a set of pixels of the macroblock is coded using some of the pixels from the same video frame as reference pixels and the rest of the macroblock is coded using reference pixels from at least one other video frame.

233.   On information and belief, one or more of the Google '112 Products include a system for video compression comprising an intra-frame coding unit configured to perform predictive coding on a set of pixels of a macroblock of pixels using a first group of reference pixels, the macroblock of pixels and the first group of reference pixels being from a video frame.

234.   On information and belief, one or more of the Google '112 Products include a system for video compression comprising an inter-frame coding unit configured to perform predictive coding on the rest of the macroblock of pixels using a second group of reference pixels, the second group of reference pixels being from at least one other video frame.

235.   On information and belief, the Google '112 Products are available to businesses and individuals throughout the United States.

236.   On information and belief, the Google '112 Products are provided to businesses and individuals located in the Eastern District of Texas.

237.   By making, using, testing, offering for sale, and/or selling products and services for interpolating a pixel during the interlacing of a video signal, including but not limited to the Google '112 Products, Google has injured Dynamic Data and is liable to the Plaintiff for directly infringing one or more claims of the '112 patent, including at least claim 11 pursuant to 35 U.S.C. § 271(a).

238.   On information and belief, Google also indirectly infringes the '112 patent by actively inducing infringement under 35 USC § 271(b).

239.   Google has had knowledge of Dynamic Data's patent portfolio, and each of the patents-in-suit, since at least September 10, 2018, when Dynamic Data's Chinese counsel sent a letter to Google regarding Dynamic Data's patent portfolio, in which Dynamic Data identified each of the patents-in-suit, including the '112 patent.

240.   Alternatively, Google has had knowledge of the '112 patent since at least service of this Complaint or shortly thereafter, and on information and belief, Google knew of the '112 patent and knew of its infringement, including by way of this lawsuit.

241.   Alternatively, Google has had knowledge of the '112 patent since at least July 22, 2014, when U.S. Patent No. 8,787,454, which is owned by Google and cites the '112 patent as relevant prior art, was issued. Alternatively, Google has had knowledge of the '112 patent since at least June 19, 2018, when U.S. Patent No. 10,003,793, which is owned by Google and cites the '112 patent as relevant prior art, was issued.

242.   On information and belief, Google intended to induce patent infringement by third-party customers and users of the Google '112 Products and had knowledge that the inducing acts would cause infringement or was willfully blind to the possibility that its inducing acts would cause infringement. Google specifically intended and was aware that the normal and customary use of the accused products would infringe the '112 patent. Google performed the acts that constitute induced infringement, and would induce actual infringement, with knowledge of the '112 patent and with the knowledge that the induced acts would constitute infringement. For example, Google provides the Google '112 Products that have the capability of operating in a manner that infringe one or more of the claims of the '112 patent, including at least claim 11, and Google further provides documentation and training materials that cause customers and end users of the Google '112 Products to utilize the products in a manner that directly infringe one or more claims of the '112 patent.[30] By providing instruction and training to customers and end-users on how to use the Google '112 Products in a manner that directly infringes one or more claims of the

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[30] *See, e.g.*, *Getting Started with Google Cloud Platform*, GOOGLE WEBSITE, *available at*: https://cloud.google.com/getting-started/ (last visited Nov. 2018); *Using Cloud Pub/Sub for Long-running Tasks*, GOOGLE SOLUTIONS WEBSITE (Sept. 19, 2018), *available at*: https://cloud.google.com/docs/tutorials#media; *Processing User-Generated Content Using Video Intelligence and Cloud Vision APIs (tutorial)*, GOOGLE SOLUTIONS WEBSITE (July 10, 2018), *available at*: https://cloud.google.com/solutions/processing-user-generated-content-using-video-intelligence; *How to cast: A quick start guide*, GOOGLE SUPPORT WEBSITE, *available at*: https://support.google.com/chromecast/answer/6006232?hl=en (last visited Nov. 2018); *Explore your Pixel phone*, GOOGLE SUPPORT WEBSITE, *available at*: https://support.google.com/pixelphone/topic/7084095?hl=en&ref_topic=7078250 (last visited Nov. 2018); *YouTube Help*, YOUTUBE WEBSITE, *available at*: https://www.youtube.com/channel/UCMDQxm7cUx3yXkfeHa5zJIQ 9 (last visited Nov. 2018); *Get started with Google Photos*, GOOGLE SUPPORT WEBSITE, *available at*: https://support.google.com/photos/answer/6220402?hl=en&ref_topic=6128818 (last visited Nov. 2018); *Tips for using Google Duo*, GOOGLE SUPPORT WEBSITE, *available at*: https://support.google.com/duo/answer/6376137?hl=en&ref_topic=6376099 (last visited Nov. 2018); *Android 5.0, Lollipop*, GOOGLE QUICK START GUIDE (2014); *Open Wonder, Android 8.0 Oreo*, ANDROID WEBSITE, *available at*: https://www.android.com/versions/oreo-8-0/ (last visited Nov. 2018).

'112 patent, including at least claim 11, Google specifically intended to induce infringement of the '112 patent. On information and belief, Google engaged in such inducement to promote the sales of the Google '112 Products, e.g., through Google user manuals, product support, marketing materials, and training materials to actively induce the users of the accused products to infringe the '112 patent. Accordingly, Google has induced and continues to induce users of the accused products to use the accused products in their ordinary and customary way to infringe the '112 patent, knowing that such use constitutes infringement of the '112 patent.

243.   The '112 patent is well-known within the industry as demonstrated by multiple citations to the '112 patent in published patents and patent applications assigned to technology companies and academic institutions. Google is utilizing the technology claimed in the '112 patent without paying a reasonable royalty. Google is infringing the '112 patent in a manner best described as willful, wanton, malicious, in bad faith, deliberate, consciously wrongful, flagrant, or characteristic of a pirate.

244.   To the extent applicable, the requirements of 35 U.S.C. § 287(a) have been met with respect to the '112 patent.

245.   As a result of Google's infringement of the '112 patent, Dynamic Data has suffered monetary damages, and seeks recovery in an amount adequate to compensate for Google's infringement, but in no event less than a reasonable royalty for the use made of the invention by Google together with interest and costs as fixed by the Court.

COUNT VII
INFRINGEMENT OF U.S. PATENT NO. 7,894,529

246.   Dynamic Data references and incorporates by reference the preceding paragraphs of this Complaint as if fully set forth herein.

247.   Google designs, makes, uses, sells, and/or offers for sale in the United States products and/or services for determining motion vectors that are each assigned to individual image regions.

248.   Google designs, makes, sells, offers to sell, imports, and/or uses products and services that implement the High Efficiency Video Coding (HEVC; also known as H.265) standard, including by way of illustrative example only: the Google Cloud Platform (e.g., Google Cloud Transcoding), Google devices (e.g., Google Chromecast Ultra, Google Cast, Google Pixel), YouTube products (e.g., YouTube website, YouTube TV, YouTube Live Streaming Platform, YouTube App), Google Photos, Google Duo, and Android 5.0+ (and all versions and variations thereof) (collectively, the "Google '529 Product(s)").

249.   On information and belief, one or more Google subsidiaries and/or affiliates use the Google '529 Products in regular business operations.

250.   On information and belief, one or more of the Google '529 Products include technology for determining motion vectors that are each assigned to individual image regions.

251.   On information and belief, Google has directly infringed and continues to directly infringe the '529 patent by, among other things, making, using, offering for sale, and/or selling technology for determining motion vectors that are each assigned to individual image regions, including but not limited to the Google '529 Products.

252.   On information and belief, one or more of the Google '529 Products enable an increase in the resolution of video and image signals during the motion estimation process.

253.   On information and belief, one or more of the Google '529 Products perform a method for determining motion vectors which are assigned to individual image regions of an image.

254.   On information and belief, one or more of the Google '529 Products perform a method wherein an image is subdivided into a number of image blocks, and a motion estimation technique is implemented to assign at least one motion vector to each of the image blocks where a modified motion vector is generated for at least a first image block.

255.   On information and belief, one or more of the Google '529 Products perform a method that determines at least a second image block through which the motion vector assigned to the first image block at least partially passes.

256.   On information and belief, one or more of the Google '529 Products perform a method that generates the modified motion vector as a function of a motion vector assigned to at least the second image block.

257.   On information and belief, one or more of the Google '529 Products perform a method that assigns the modified motion vector as the motion vector to the first image block.

258.   On information and belief, the Google '529 Products are available to businesses and individuals throughout the United States.

259.   On information and belief, the Google '529 Products are provided to businesses and individuals located in the Eastern District of Texas.

260.   By making, using, testing, offering for sale, and/or selling products and services for interpolating a pixel during the interlacing of a video signal, including but not limited to the Google '529 Products, Google has injured Dynamic Data and is liable to the Plaintiff for directly infringing one or more claims of the '529 patent, including at least claim 1 pursuant to 35 U.S.C. § 271(a).

261.   On information and belief, Google also indirectly infringes the '529 patent by actively inducing infringement under 35 USC § 271(b).

262.   Google has had knowledge of Dynamic Data's patent portfolio, and each of the patents-in-suit, since at least September 10, 2018, when Dynamic Data's Chinese counsel sent a letter to Google regarding Dynamic Data's patent portfolio, in which Dynamic Data identified each of the patents-in-suit, including the '529 patent.

263.   Alternatively, Google has had knowledge of the '529 patent since at least service of this Complaint or shortly thereafter, and on information and belief, Google knew of the '529 patent and knew of its infringement, including by way of this lawsuit.

264.   On information and belief, Google intended to induce patent infringement by third-party customers and users of the Google '529 Products and had knowledge that the inducing acts would cause infringement or was willfully blind to the possibility that its inducing acts would cause infringement. Google specifically intended and was aware that the normal and customary use of the accused products would infringe the '529 patent. Google performed the acts that constitute induced infringement, and would induce actual infringement, with knowledge of the '529 patent and with the knowledge that the induced acts would constitute infringement. For example, Google provides the Google '529 Products that have the capability of operating in a manner that infringe one or more of the claims of the '529 patent, including at least claim 1, and Google further provides documentation and training materials that cause customers and end users of the Google '529 Products to utilize the products in a manner that directly infringe one or more claims of the '529 patent.[31] By providing instruction and training to customers and end-users on

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[31] *See, e.g.*, *Getting Started with Google Cloud Platform*, GOOGLE WEBSITE, *available at*: https://cloud.google.com/getting-started/ (last visited Nov. 2018); *Using Cloud Pub/Sub for Long-running Tasks*, GOOGLE SOLUTIONS WEBSITE (Sept. 19, 2018), *available at*: https://cloud.google.com/docs/tutorials#media; *Processing User-Generated Content Using Video Intelligence and Cloud Vision APIs (tutorial)*, GOOGLE SOLUTIONS WEBSITE (July 10, 2018), *available at*: https://cloud.google.com/solutions/processing-user-generated-content-using-video-intelligence; *How to cast: A quick start guide*, GOOGLE SUPPORT WEBSITE, *available at*: https://support.google.com/chromecast/answer/6006232?hl=en (last visited Nov.

how to use the Google '529 Products in a manner that directly infringes one or more claims of the '529 patent, including at least claim 1, Google specifically intended to induce infringement of the '529 patent. On information and belief, Google engaged in such inducement to promote the sales of the Google '529 Products, e.g., through Google user manuals, product support, marketing materials, and training materials to actively induce the users of the accused products to infringe the '529 patent. Accordingly, Google has induced and continues to induce users of the accused products to use the accused products in their ordinary and customary way to infringe the '529 patent, knowing that such use constitutes infringement of the '529 patent.

265.   The '529 patent is well-known within the industry as demonstrated by multiple citations to the '529 patent in published patents and patent applications assigned to technology companies and academic institutions. Google is utilizing the technology claimed in the '529 patent without paying a reasonable royalty. Google is infringing the '529 patent in a manner best described as willful, wanton, malicious, in bad faith, deliberate, consciously wrongful, flagrant, or characteristic of a pirate.

266.   To the extent applicable, the requirements of 35 U.S.C. § 287(a) have been met with respect to the '529 patent.

2018); *Explore your Pixel phone*, GOOGLE SUPPORT WEBSITE, *available at*: https://support.google.com/pixelphone/topic/7084095?hl=en&ref_topic=7078250 (last visited Nov. 2018); *YouTube Help*, YOUTUBE WEBSITE, *available at*: https://www.youtube.com/channel/UCMDQxm7cUx3yXkfeHa5zJIQ 9 (last visited Nov. 2018); *Get started with Google Photos*, GOOGLE SUPPORT WEBSITE, *available at*: https://support.google.com/photos/answer/6220402?hl=en&ref_topic=6128818 (last visited Nov. 2018); *Tips for using Google Duo*, GOOGLE SUPPORT WEBSITE, *available at*: https://support.google.com/duo/answer/6376137?hl=en&ref_topic=6376099 (last visited Nov. 2018); *Android 5.0, Lollipop*, GOOGLE QUICK START GUIDE (2014); *Open Wonder, Android 8.0 Oreo*, ANDROID WEBSITE, *available at*: https://www.android.com/versions/oreo-8-0/ (last visited Nov. 2018).

267. As a result of Google's infringement of the '529 patent, Dynamic Data has suffered monetary damages, and seeks recovery in an amount adequate to compensate for Google's infringement, but in no event less than a reasonable royalty for the use made of the invention by Google together with interest and costs as fixed by the Court.

COUNT VIII
INFRINGEMENT OF U.S. PATENT NO. 7,519,230

268. Dynamic Data references and incorporates by reference the preceding paragraphs of this Complaint as if fully set forth herein.

269. Google designs, makes, uses, sells, and/or offers for sale in the United States products and/or services for selecting a background motion vector for a pixel in an occlusion region of an image.

270. Google designs, makes, sells, offers to sell, imports, and/or uses products and services that implement VP9 encoding, including by way of illustrative example only: the Google Cloud Platform (e.g., Google Cloud Transcoding), Google devices (e.g., Google Chromecast Ultra, Google Cast, Google Pixel), YouTube products (e.g., YouTube website, YouTube TV, YouTube Live Streaming Platform, YouTube App), Google Photos, Google Duo, and Android 5.0+ (and all versions and variations thereof) (collectively, the "Google '230 Product(s)").

271. On information and belief, one or more Google subsidiaries and/or affiliates use the Google '230 Products in regular business operations.

272. On information and belief, one or more of the Google '230 Products include technology for selecting a background motion vector for a pixel in an occlusion region of an image.

273. On information and belief, the Google '230 Products are available to businesses and individuals throughout the United States.

274.   On information and belief, the Google '230 Products are provided to businesses and individuals located in the Eastern District of Texas.

275.   On information and belief, Google has directly infringed and continues to directly infringe the '230 patent by, among other things, making, using, offering for sale, and/or selling technology for selecting a background motion vector for a pixel in an occlusion region of an image, including but not limited to the Google '230 Products.

276.   On information and belief, the Google '230 Products comprise systems and methods for selecting a background motion vector for a pixel in an occlusion region of an image.

277.   On information and belief, the Google '230 Products determine the correct motion vector in occlusion regions, thereby reducing or eliminating artifacts of motion compensated image rate converters, which are referred to as "halos" in the display of video images.

278.   On information and belief, the Google '230 Products perform a method of selecting a background motion vector for a pixel in an occlusion region of an image comprising computing a model-based motion vector for the pixel on basis of a motion model being determined on basis of a part of a motion vector field of the image.

279.   On information and belief, the Google '230 Products perform a method of selecting a background motion vector for a pixel in an occlusion region of an image comprising comparing the model-based motion vector with each of the motion vectors of the set of motion vectors.

280.   On information and belief, the Google '230 Products perform a method of selecting a background motion vector for a pixel in an occlusion region of an image comprising selecting a particular motion vector of the set of motion vectors on basis of the comparing and for assigning the particular motion vector as the background motion vector.

281.   By making, using, testing, offering for sale, and/or selling products and services, including but not limited to the Google '230 Products, Google has injured Dynamic Data and is liable for directly infringing one or more claims of the '230 patent, including at least claim 6, pursuant to 35 U.S.C. § 271(a).

282.   On information and belief, Google also indirectly infringes the '230 patent by actively inducing infringement under 35 USC § 271(b).

283.   Google has had knowledge of Dynamic Data's patent portfolio, and each of the patents-in-suit, since at least September 10, 2018, when Dynamic Data's Chinese counsel sent a letter to Google regarding Dynamic Data's patent portfolio, in which Dynamic Data identified each of the patents-in-suit, including the '230 patent.

284.   Alternatively, Google has had knowledge of the '230 patent since at least service of this Complaint or shortly thereafter, and on information and belief, Google knew of the '230 patent and knew of its infringement, including by way of this lawsuit.

285.   On information and belief, Google intended to induce patent infringement by third-party customers and users of the Google '230 Products and had knowledge that the inducing acts would cause infringement or was willfully blind to the possibility that its inducing acts would cause infringement. Google specifically intended and was aware that the normal and customary use of the accused products would infringe the '230 patent. Google performed the acts that constitute induced infringement, and would induce actual infringement, with knowledge of the '230 patent and with the knowledge that the induced acts would constitute infringement. For example, Google provides the Google '230 Products that have the capability of operating in a manner that infringe one or more of the claims of the '230 patent, including at least claim 6, and Google further provides documentation and training materials that cause customers and end users

of the Google '230 Products to utilize the products in a manner that directly infringe one or more

claims of the '230 patent.[32] By providing instruction and training to customers and end-users on

how to use the Google '230 Products in a manner that directly infringes one or more claims of the

'230 patent, including at least claim 6, Google specifically intended to induce infringement of the

'230 patent. On information and belief, Google engaged in such inducement to promote the sales

of the Google '230 Products, e.g., through Google user manuals, product support, marketing

materials, and training materials to actively induce the users of the accused products to infringe

the '230 patent. Accordingly, Google has induced and continues to induce users of the accused

products to use the accused products in their ordinary and customary way to infringe the '230

patent, knowing that such use constitutes infringement of the '230 patent.

286.   The '230 patent is well-known within the industry as demonstrated by multiple

citations to the '230 patent in published patents and patent applications assigned to technology

companies and academic institutions. Google is utilizing the technology claimed in the '230 patent

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[32] *See, e.g.*, *Getting Started with Google Cloud Platform*, GOOGLE WEBSITE, *available at*:
https://cloud.google.com/getting-started/ (last visited Nov. 2018); *Using Cloud Pub/Sub for
Long-running Tasks*, GOOGLE SOLUTIONS WEBSITE (Sept. 19, 2018), *available at*:
https://cloud.google.com/docs/tutorials#media; *Processing User-Generated Content Using
Video Intelligence and Cloud Vision APIs (tutorial)*, GOOGLE SOLUTIONS WEBSITE (July 10,
2018), *available at*: https://cloud.google.com/solutions/processing-user-generated-content-
using-video-intelligence; *How to cast: A quick start guide*, GOOGLE SUPPORT WEBSITE,
available at: https://support.google.com/chromecast/answer/6006232?hl=en (last visited Nov.
2018); *Explore your Pixel phone*, GOOGLE SUPPORT WEBSITE, *available at*:
https://support.google.com/pixelphone/topic/7084095?hl=en&ref_topic=7078250 (last visited
Nov. 2018); *YouTube Help*, YOUTUBE WEBSITE, *available at*:
https://www.youtube.com/channel/UCMDQxm7cUx3yXkfeHa5zJIQ 9 (last visited Nov.
2018); *Get started with Google Photos*, GOOGLE SUPPORT WEBSITE, *available at*:
https://support.google.com/photos/answer/6220402?hl=en&ref_topic=6128818 (last visited
Nov. 2018); *Tips for using Google Duo*, GOOGLE SUPPORT WEBSITE, *available at*:
https://support.google.com/duo/answer/6376137?hl=en&ref_topic=6376099 (last visited Nov.
2018); *Android 5.0, Lollipop*, GOOGLE QUICK START GUIDE (2014); *Open Wonder, Android 8.0
Oreo*, ANDROID WEBSITE, *available at*: https://www.android.com/versions/oreo-8-0/ (last
visited Nov. 2018).

without paying a reasonable royalty. Google is infringing the '230 patent in a manner best described as willful, wanton, malicious, in bad faith, deliberate, consciously wrongful, flagrant, or characteristic of a pirate.

287.   To the extent applicable, the requirements of 35 U.S.C. § 287(a) have been met with respect to the '230 patent.

288.   As a result of Google's infringement of the '230 patent, Dynamic Data has suffered monetary damages, and seeks recovery in an amount adequate to compensate for Google's infringement, but in no event less than a reasonable royalty for the use made of the invention by Google together with interest and costs as fixed by the Court.

COUNT IX
INFRINGEMENT OF U.S. PATENT NO. 7,542,041

289.   Dynamic Data references and incorporates by reference the preceding paragraphs of this Complaint as if fully set forth herein.

290.   Google designs, makes, uses, sells, and/or offers for sale in the United States products and/or services for dynamically configuring a multi-pipe pipeline system.

291.   Google designs, makes, sells, offers to sell, imports, and/or uses products that dynamically configure a multi-pipe pipeline system, including by way of illustrative example only: Google Cloud platform (e.g., Google Cloud Compute) and Google Pixel devices (e.g., Google Pixel 2, Google Pixel 2xl, Google Pixel 3, Google Pixel 3xl) (collectively, the "Google '041 Product(s)").

292.   On information and belief, one or more Google subsidiaries and/or affiliates use the Google '041 Products in regular business operations.

293.   On information and belief, one or more of the Google '041 Products include technology for dynamically configuring a multi-pipe pipeline system.

294.   On information and belief, Google has directly infringed and continues to directly infringe the '041 patent by, among other things, making, using, offering for sale, and/or selling technology for dynamically configuring a multi-pipe pipeline system, including but not limited to the Google '041 Products.

295.   On information and belief, one or more of the Google '041 Products enable a multiple-pipeline system that is dynamically configurable to effect various combinations of functions for each pipeline.

296.   On information and belief, one or more of the Google '041 Products include a multiple pipeline system that includes a pool of auxiliary function blocks that are provided as required to select pipelines.

297.   On information and belief, one or more of the Google '041 Products consist of a multiple-pipeline system wherein each pipeline is configured to include a homogenous set of core functions.

298.   On information and belief, one or more of the Google '041 Products include a pool of auxiliary functions is provided for selective insertion of auxiliary functions between core functions of select pipelines.

299.   On information and belief, one or more of the Google '041 Products includes auxiliary functions wherein each auxiliary function includes a multiplexer that allows it to be selectively coupled within each pipeline.

300.   On information and belief, one or more of the Google '041 Products contain a processing system that includes a plurality of pipelines, with each pipeline of the plurality

including a plurality of core pipeline elements that are configured to sequentially process data as it traverses the pipeline.

301. On information and belief, one or more of the Google '041 Products contain a processing system that includes a plurality of auxiliary elements, each auxiliary element of the plurality of auxiliary elements being configured to be selectively coupled to multiple pipelines of the plurality of pipelines.

302. On information and belief, one or more of the Google '041 Products contain a processing system wherein the auxiliary elements are responsive to external coupling-select signals.

303. On information and belief, one or more of the Google '041 Products contain a processing system wherein a plurality of auxiliary elements are within a selected pipeline of the multiple pipelines, between a pair of core pipeline elements of the plurality of core pipeline elements to process the data as it traverses between the pair of core elements.

304. On information and belief, the Google '041 Products are available to businesses and individuals throughout the United States.

305. On information and belief, the Google '041 Products are provided to businesses and individuals located in the Eastern District of Texas.

306. By making, using, testing, offering for sale, and/or selling products and services for dynamically configuring a multi-pipe pipeline system, including but not limited to the Google '041 Products, Google has injured Dynamic Data and is liable to the Plaintiff for directly infringing one or more claims of the '041 patent, including at least claim 1 pursuant to 35 U.S.C. § 271(a).

307. On information and belief, Google also indirectly infringes the '041 patent by actively inducing infringement under 35 USC § 271(b).

308.   Google has had knowledge of Dynamic Data's patent portfolio, and each of the patents-in-suit, since at least September 10, 2018, when Dynamic Data's Chinese counsel sent a letter to Google regarding Dynamic Data's patent portfolio, in which Dynamic Data identified each of the patents-in-suit, including the '041 patent.

309.   Alternatively, Google has had knowledge of the '041 patent since at least service of this Complaint or shortly thereafter, and on information and belief, Google knew of the '041 patent and knew of its infringement, including by way of this lawsuit.

310.   On information and belief, Google intended to induce patent infringement by third-party customers and users of the Google '041 Products and had knowledge that the inducing acts would cause infringement or was willfully blind to the possibility that its inducing acts would cause infringement. Google specifically intended and was aware that the normal and customary use of the accused products would infringe the '041 patent. Google performed the acts that constitute induced infringement, and would induce actual infringement, with knowledge of the '041 patent and with the knowledge that the induced acts would constitute infringement. For example, Google provides the Google '041 Products that have the capability of operating in a manner that infringe one or more of the claims of the '041 patent, including at least claim 1, and Google further provides documentation and training materials that cause customers and end users of the Google '041 Products to utilize the products in a manner that directly infringe one or more claims of the '041 patent.[33] By providing instruction and training to customers and end-users on

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[33] *See, e.g.*, *Getting Started with Google Cloud Platform*, GOOGLE WEBSITE, *available at*: https://cloud.google.com/getting-started/ (last visited Nov. 2018); *Using Cloud Pub/Sub for Long-running Tasks*, GOOGLE SOLUTIONS WEBSITE (Sept. 19, 2018), *available at*: https://cloud.google.com/docs/tutorials#media; *Processing User-Generated Content Using Video Intelligence and Cloud Vision APIs (tutorial)*, GOOGLE SOLUTIONS WEBSITE (July 10, 2018), *available at*: https://cloud.google.com/solutions/processing-user-generated-content-using-video-intelligence; *How to cast: A quick start guide*, GOOGLE SUPPORT WEBSITE, *available at*: https://support.google.com/chromecast/answer/6006232?hl=en (last visited Nov.

how to use the Google '041 Products in a manner that directly infringes one or more claims of the '041 patent, including at least claim 1, Google specifically intended to induce infringement of the '041 patent. On information and belief, Google engaged in such inducement to promote the sales of the Google '041 Products, e.g., through Google user manuals, product support, marketing materials, and training materials to actively induce the users of the accused products to infringe the '041 patent. Accordingly, Google has induced and continues to induce users of the accused products to use the accused products in their ordinary and customary way to infringe the '041 patent, knowing that such use constitutes infringement of the '041 patent.

311. The '041 patent is well-known within the industry as demonstrated by multiple citations to the '041 patent in published patents and patent applications assigned to technology companies and academic institutions. Google is utilizing the technology claimed in the '041 patent without paying a reasonable royalty. Google is infringing the '041 patent in a manner best described as willful, wanton, malicious, in bad faith, deliberate, consciously wrongful, flagrant, or characteristic of a pirate.

312. To the extent applicable, the requirements of 35 U.S.C. § 287(a) have been met with respect to the '041 patent.

313. As a result of Google's infringement of the '041 patent, Dynamic Data has suffered monetary damages, and seeks recovery in an amount adequate to compensate for Google's infringement, but in no event less than a reasonable royalty for the use made of the invention by Google together with interest and costs as fixed by the Court.

2018); *Explore your Pixel phone*, GOOGLE SUPPORT WEBSITE, *available at*:
https://support.google.com/pixelphone/topic/7084095?hl=en&ref_topic=7078250 (last visited Nov. 2018).

<u>**COUNT X**</u>
<u>**INFRINGEMENT OF U.S. PATENT NO. 7,571,450**</u>

314.   Dynamic Data references and incorporates by reference the preceding paragraphs of this Complaint as if fully set forth herein.

315.   Google designs, makes, uses, sells, and/or offers for sale in the United States products and/or services for displaying information.

316.   Google designs, makes, sells, offers to sell, imports, and/or uses products and services that implement Dynamic Adaptive Streaming over HTTP (MPEG-DASH), including by way of illustrative example only: Google devices (e.g., Google Chromecast Ultra, Google Cast, Google Pixel) and YouTube products (e.g., YouTube website, YouTube TV, YouTube Live Streaming Platform, YouTube App) (collectively, the "Google '450 Product(s)").

317.   On information and belief, one or more Google subsidiaries and/or affiliates use the Google '450 Products in regular business operations.

318.   On information and belief, one or more of the Google '450 Products include technology for displaying information.

319.   On information and belief, Google has directly infringed and continues to directly infringe the '450 patent by, among other things, making, using, offering for sale, and/or selling technology for displaying information, including but not limited to the Google '450 Products.

320.   On information and belief, one or more of the Google '450 Products enable methods and systems wherein a user does not need to make a new selection after being switched from one service to a second service.

321.   On information and belief, one or more of the Google '450 Products permit a user of an information display system to have selections made on a first service also presented when

the user switches to a second service without requiring the user to browse through the menus to define the type of information to be displayed a second time.

322.   On information and belief, one or more of the Google '450 Products enable a user selection being made on the basis of the provided options while the first service was selected is use to select the appropriate data elements of the stream of the second service.

323.   On information and belief, one or more of the Google '450 Products enable various content sources to share similar information models.

324.   On information and belief, one or more of the Google '450 Products perform a method of displaying information on a display device wherein receiving a transport stream comprises services, with the services having elementary streams of video and of data elements.

325.   On information and belief, one or more of the Google '450 Products perform a method of displaying information on a display device wherein user actions of making a user selection of a type of information to be displayed on the device are received.

326.   On information and belief, one or more of the Google '450 Products perform a method of displaying information on a display device wherein filtering to select a data element of a first one of the services on the basis of the user selection is performed.

327.   On information and belief, one or more of the Google '450 Products perform a method of displaying information on a display device wherein rendering to calculate an output image to be displayed on the display device, on the basis of the first data element selected by the filer is performed.

328.   On information and belief, one or more of the Google '450 Products perform a method of displaying information on a display device wherein switching from the first one of the services to a second one of the services, characterized in comprising a second step of filtering to

select a second data-element of the second one of the services, on basis of the user selection is performed.

329. On information and belief, one or more of the Google '450 Products perform a method of displaying information on a display device wherein being switched from the first one of the services to the second one of the services, with the data-element and the second data-element being mutually semantically related and a second step of rendering to calculate the output image to be displayed on the display device, on basis of the second data-element selected by the filter is performed.

330. On information and belief, the Google '450 Products are available to businesses and individuals throughout the United States.

331. On information and belief, the Google '450 Products are provided to businesses and individuals located in the Eastern District of Texas.

332. By making, using, testing, offering for sale, and/or selling products and services for displaying information, including but not limited to the Google '450 Products, Google has injured Dynamic Data and is liable to the Plaintiff for directly infringing one or more claims of the '450 patent, including at least claim 8 pursuant to 35 U.S.C. § 271(a).

333. On information and belief, Google also indirectly infringes the '450 patent by actively inducing infringement under 35 USC § 271(b).

334. Google has had knowledge of Dynamic Data's patent portfolio, and each of the patents-in-suit, since at least September 10, 2018, when Dynamic Data's Chinese counsel sent a letter to Google regarding Dynamic Data's patent portfolio, in which Dynamic Data identified each of the patents-in-suit, including the '450 patent.

335.   Alternatively, Google has had knowledge of the '450 patent since at least service of this Complaint or shortly thereafter, and on information and belief, Google knew of the '450 patent and knew of its infringement, including by way of this lawsuit.

336.   On information and belief, Google intended to induce patent infringement by third-party customers and users of the Google '450 Products and had knowledge that the inducing acts would cause infringement or was willfully blind to the possibility that its inducing acts would cause infringement. Google specifically intended and was aware that the normal and customary use of the accused products would infringe the '450 patent. Google performed the acts that constitute induced infringement, and would induce actual infringement, with knowledge of the '450 patent and with the knowledge that the induced acts would constitute infringement. For example, Google provides the Google '450 Products that have the capability of operating in a manner that infringe one or more of the claims of the '450 patent, including at least claim 8, and Google further provides documentation and training materials that cause customers and end users of the Google '450 Products to utilize the products in a manner that directly infringe one or more claims of the '450 patent.[34] By providing instruction and training to customers and end-users on how to use the Google '450 Products in a manner that directly infringes one or more claims of the '450 patent, including at least claim 8, Google specifically intended to induce infringement of the

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[34] *See, e.g.*, *Getting Started with Google Cloud Platform*, GOOGLE WEBSITE, *available at*: https://cloud.google.com/getting-started/ (last visited Nov. 2018); *Using Cloud Pub/Sub for Long-running Tasks*, GOOGLE SOLUTIONS WEBSITE (Sept. 19, 2018), *available at*: https://cloud.google.com/docs/tutorials#media; *Processing User-Generated Content Using Video Intelligence and Cloud Vision APIs (tutorial)*, GOOGLE SOLUTIONS WEBSITE (July 10, 2018), *available at*: https://cloud.google.com/solutions/processing-user-generated-content-using-video-intelligence; *How to cast: A quick start guide*, GOOGLE SUPPORT WEBSITE, *available at*: https://support.google.com/chromecast/answer/6006232?hl=en (last visited Nov. 2018); *Explore your Pixel phone*, GOOGLE SUPPORT WEBSITE, *available at*: https://support.google.com/pixelphone/topic/7084095?hl=en&ref_topic=7078250 (last visited Nov. 2018).

'450 patent. On information and belief, Google engaged in such inducement to promote the sales of the Google '450 Products, e.g., through Google user manuals, product support, marketing materials, and training materials to actively induce the users of the accused products to infringe the '450 patent. Accordingly, Google has induced and continues to induce users of the accused products to use the accused products in their ordinary and customary way to infringe the '450 patent, knowing that such use constitutes infringement of the '450 patent.

337.   The '450 patent is well-known within the industry as demonstrated by multiple citations to the '450 patent in published patents and patent applications assigned to technology companies and academic institutions. Google is utilizing the technology claimed in the '450 patent without paying a reasonable royalty. Google is infringing the '450 patent in a manner best described as willful, wanton, malicious, in bad faith, deliberate, consciously wrongful, flagrant, or characteristic of a pirate.

338.   To the extent applicable, the requirements of 35 U.S.C. § 287(a) have been met with respect to the '450 patent.

339.   As a result of Google's infringement of the '450 patent, Dynamic Data has suffered monetary damages, and seeks recovery in an amount adequate to compensate for Google's infringement, but in no event less than a reasonable royalty for the use made of the invention by Google together with interest and costs as fixed by the Court.

PRAYER FOR RELIEF

WHEREFORE, Dynamic Data respectfully requests that this Court enter:

A. A judgment in favor of Dynamic Data that Google has infringed, either literally and/or under the doctrine of equivalents, the '073, '054, '918, '689, '177, '112, '529, '230, '041, and '450 patents;

B. An award of damages resulting from Google's acts of infringement in accordance with 35 U.S.C. § 284;

C. A judgment and order finding that Google's infringement was willful, wanton, malicious, bad-faith, deliberate, consciously wrongful, flagrant, or characteristic of a pirate within the meaning of 35 U.S.C. § 284 and awarding to Dynamic Data enhanced damages.

D. A judgment and order finding that this is an exceptional case within the meaning of 35 U.S.C. § 285 and awarding to Dynamic Data its reasonable attorneys' fees against Google.

E. Any and all other relief to which Dynamic Data may show themselves to be entitled.

JURY TRIAL DEMANDED

Pursuant to Rule 38 of the Federal Rules of Civil Procedure, Dynamic Data Technologies, LLC requests a trial by jury of any issues so triable by right.

Dated: November 5, 2018

Respectfully submitted,

*/s/ Daniel P. Hipskind*_____
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